TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1887.

No. 79.

WILLIAM HAILES, JAMES GRAY, AND CHARLES SELKIRK, APPELLANTS,

vs.

THE ALBANY STOVE COMPANY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF NEW YORK.

FILED OCTOBER 9, 1884.

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INDEX.

	Original.	Print.
Statement	1	1
Bill of complaint	3	1
Order for subpœna	11	6
Subpœna	12	6
Præcipe for appearance	14	7
Order for appearance	15	8
Stipulation for substitution	16	8
Answer	17	8
Replication	21	10
Substitution of complainants' attorney	22	11
Suggestion of disclaimer	25	12
Decree	26	12
Stipulation as to proofs	28	13
Stipulation appointing special examiner (omitted in printing)	29	—
Notice to take testimony (omitted in printing)	29	—
Complainants' testimony	30	14
Testimony of Alexander Selkirk	33	15
George Baker (omitted in printing)	40	—
Alexander Selkirk (omitted in printing)	41	—
Joseph M. Northrup (omitted in printing)	49	—
Alexander Selkirk (recalled)	65	20
Josiah P. Eldridge (omitted in printing)	96	—
Alexander Selkirk (resumed)	102	39
William J. Keep	139	61

JUDD & DETWEILER, PRINTERS, WASHINGTON, OCTOBER 18, 1887.

	Original.	Print.
Testimony of Alexander Selkirk (cross). (Omitted in printing to cross-question 259)	152	68
William Hailes (omitted in printing)	231	—
Josiah P. Eldridge (recalled). (Omitted in printing)	241	—
James Morrison (omitted in printing)	244	—
Complainants' exhibits—		
No. 1—Rathbone and Hailes' patent	247	76
No. 2—Assignment of Hailes to Gray (omitted in printing)	254	—
No. 3—Assignment of L. Rathbone to Rathbone, Sard & Co. (omitted in printing)	254	—
No. 4—Assignment of Rathbone, Sard & Co. to Gray & Selkirk (omitted in printing)	256	—
No. 5—Assignment of A. Selkirk to C. Selkirk (omitted in printing)	258	—
No. 6—Assignment of Gray to Hailes (omitted in printing)	260	—
No. 29—Hunt patent, No. 50073 (omitted in printing)	261	—
Examiner's certificate	268	79
Stipulation appointing special examiner	270	80
Defendant's testimony	270	81
Testimony of Gurdon G. Wolf (omitted in printing)	271	—
William E. Hagan (cross-examination omitted in printing)	280	—
Gurdon G. Wolf (recalled). (Omitted in printing)	428	—
William E. Hagan (resumed). (Omitted in printing)	431	—
Defendant's exhibits—		
Russell patent	440	92
Hunt patent	449	97
Harrison patent (omitted in printing)	458	—
Morrison patent (omitted in printing)	465	—
Magee patent (omitted in printing)	474	—
Treadwell patent (omitted in printing)	480	—
Easterly patent	488	101
Rathbone & Hailes' file wrapper	493	101
Buchanan patent (omitted in printing)	503	—
Hewes patent (omitted in printing)	509	—
Schmedinghoff patent (omitted in printing)	515	—
Hunt file wrapper (omitted in printing)	520	—
Defendant's testimony	535	105
Testimony of Zebulon Hunt (omitted in printing)	535	—
Wm. E. Hagan (recalled)	544	105
Examiner's certificate	559	114
Stipulation as to disclaimer	560	114
Disclaimer	561	115
Opinion	563	115
Notice of motion to reargue	568	118
Petition for appeal	569	118
Bond on appeal	572	119
Citation	575	121
Clerk's certificate	577	121
Stipulation as to facts	578	122
Stipulation in regard to printing record	580	122

1 United States Circuit Court, Northern District of New York.
In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK
versus
ALBANY STOVE COMPANY.
} Docket No. 3198.

The complainants in the above-entitled cause filed their bill of complaint against the defendant herein on the 9th day of May, 1881, which bill is hereto annexed.

A subpœna to appear and answer in said cause was thereupon issued and served personally upon the defendant previous to the return day thereof, which subpœna and proof of service thereto are hereto annexed.

On the 6th day of June, 1881, the defendant duly appeared in said cause, by W. Frothingham as its solicitor, and on the 17th day of August, 1881, filed its answer to the bill of complaint herein, which answer is hereto annexed.

On the 5th day of September, 1881, the complainants filed their replication to the said answer, which replication is hereto annexed.

Testimony was thereafter taken by and on behalf of the respective parties, the said cause was brought to a hearing and argued by counsel upon pleadings and proofs before the Honorable William J. Wallace at a term of this court.

A decision was duly made by said court in favor of the defendant, and filed herein the 16th day of March, 1883.

2 On the 20th day of March, 1883, at a term of this court held at Utica—present, the Honorable William J. Wallace, judge—a decree in favor of the defendant in the above-entitled cause dismissing the bill with costs was duly made and entered therein, which decree is hereto annexed.

That thereafter and on the 14th day of January, 1884, the defendant's costs and disbursements were duly taxed and adjusted by the clerk of this court at $623.46.

3 Circuit Court of the United States for the Northern District of New York, in the Second Circuit. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK, Plaintiffs,

against

THE ALBANY STOVE COMPANY, Defendant.

To the honorable the judges of the circuit court of the United States for the northern district of New York:

William Hailes, James Gray, and Charles Selkirk, all citizens of the United States and residing in the city of Albany, in the State of New York, bring this their bill of complaint against the Albany

Stove Company, a corporation organized and existing, as your orators are informed and believe, under the laws of the State of New York, engaged in the manufacture and sale of coal-heating stoves at Albany, in the county of Albany and State of New York; and thereupon your orators complain and say:

I. That prior to the 21st day of November, 1865, Lewis Rathbone and William Hailes, as your orators are informed and verily believe, were the first and original inventors of certain new and
4 useful improvements in coal-heating stoves; that they made application in due form to the Commissioner of Patents for letters patent of the United States therefor; that after due proceedings were had letters patent of the United States No. 51085 were issued to them whereby there was granted and secured to them, their heirs, executors, administrators, and assigns, for the term of seventeen years from said 21st day of November, 1865, the full and exclusive right and liberty of making, constructing, and vending to others for use the inventions and improvements set forth in said letters patent, which, or a certified copy thereof, your orators are ready to produce here in court.

II. And your orators further state that since the grant and issue of said letters patent your orators, by reason of sundry mesne conveyances or assignments in writing given for good and valid considerations and duly recorded in the Patent Office of the United States as follows: William Hailes to James Gray, September 26, 1879, recorded September 29, 1879, in liber 24, page 107; Lewis Rathbone to Rathbone, Sard and Co., July 6, 1880, recorded February 14, 1881, in liber 26, page 91; Rathbone, Sard & Co. to James Gray and Alexander Selkirk, October 17, 1880, recorded February 14, 1881, in liber 26, page 93; James Gray to William Hailes, February 12, 1881, recorded February 14, 1881, in liber 26, page 95; Alexander Selkirk to Charles Selkirk, February 12, 1881, recorded February 14, 1881, in liber 26, page 96, became and now are the sole and exclusive owners of the right, title, and interest of said Lewis Rathbone and William Hailes of, in, and to the said invention and letters patent and all the rights, privileges, and claims for infringement or otherwise pertaining thereto, as by the said assignments, or duly certified copies thereof ready to be produced here in court, will more fully appear; and that your orators, by sale, purchase, and assign-
5 ment as aforesaid, became and now are possessed of the entire right, title, and interest in and to all claims and demands for profits and damages for the past unlicensed use of the invention covered by the said letters patent No. 51085 in, to, and for the State of New York, as well as for the whole United States and Territories.

III. And your orators further state that they verily believe the letters patent on which this suit is brought to be in all respects good and valid and of great value and utility, and have been extensively introduced into use to the great benefit and advantage of the public, and that the public have generally acknowledged and respected the said letters patent and the rights of your orators and their assignors and other persons thereunder.

IV. And your orators further show that they are informed and believe that their grantors and assignors and other owners of said letters patent or some interest therein and their licensees are now and for several years past have been largely interested in the manufacture of coal-heating stoves embodying the inventions and improvements covered by said letters patent, and have invested large sums of money in the establishment and carrying on the manufacture and sale of such stoves, and that any unauthorized use of the inventions to which said patent relates has a direct and immediate tendency to diminish the gains and profits which your orators are entitled to receive.

V. And your orators further show that the defendants, well knowing the premises, but contriving to injure your orators, and in infringement of the said letters patent and in violation of the exclusive rights of your orators thereunder, have, as your orators are informed and believe, since the grant of said letters patent, both before and since your orators became the owners thereof, at the city of Albany, within the said northern district of New York, and at other places within the United States and Territories thereof,
6 made and sold and are now making and selling coal-heating stoves having the inventions or improvements like or substantially like the coal stoves, with a perforated or fingered fire pot, with a grate bottom within a circular stove, having a provision for the admission of air below the point of suspension of said fire pot, shown and described in certain letters patent granted to Rathbone and Hailes and numbered 51085 as aforesaid; that said stoves so made and sold by the defendant embody and depend for their efficiency upon the inventions covered by the said Rathbone and Hailes patent owned by your orators as aforesaid; that neither your orators or their assignors or other owners or the owners of some interest therein have ever assented to any violation or infringement of their rights; that the defendant had no right or license to make use of said inventions, and, therefore, that it has by the manufacture and sale of the stoves as aforesaid infringed upon and are now infringing upon the exclusive rights of your orators as secured to them by said patent, but to what extent or how many such stoves they have so manufactured and sold your orators are unable to say, and hence pray that said defendant may discover and set forth the same in full in its answer to this bill.

VI. And your orators further show that they verily believe that the defendant has made large gains and profits by the aforesaid unlawful use of your orators' patented inventions, which gains and profits of right and in equity belong to your orators; and they further show that the aforesaid unlawful acts of the defendant inflict great damage upon your orators by interfering with and preventing that exclusive enjoyment of the aforesaid Rathbone and Hailes' invention to which your orators are of right and in law entitled.

VII. And your orators further show that said defendant threatening to continue, against the will and consent of your orators, the
7 unlawful use of the aforesaid patented inventions, to the great

and irreparable loss and injury of your orators, and deprive them of great gains and profits which otherwise they would obtain, but which are now received by the defendant, all of which actings, doings, and threats are contrary to equity and good conscience and in defiance of your orators' rights, and tend to the manifest wrong and injury of your orators in the premises.

In consideration whereof, and inasmuch as your orators can have no adequate remedy or relief in the premises save in this honorable court, where matters of this nature are properly cognizable and relievable:

To the end, therefore, that The Albany Stove Company, defendant, may show, if it can, why your orators should not have the relief hereby prayed, and may, according to the best and utmost of its or any of its officers', trustees', or directors' knowledge, remembrance, information, and belief, full, direct, and perfect answers make, upon the corporate oaths of its officers, directors, or trustees, or some one of their oaths, to such of the several interrogatories hereinafter numbered and set forth as by the note hereunder written it is required to answer—that is to say:

1. Whether the said plaintiffs are not the owners of the aforesaid letters patent No. 51085, granted to Lewis Rathbone and William Hailes, November 21, 1865, and of all claims for infringements thereof.

2. Whether the defendant has not, at Albany, in the county of Albany, in the northern district of the State of New York, and elsewhere in the United States or Territories thereof, during the past ten years, or some part and what part thereof, made and sold coal-heating stoves like or substantially like the stoves shown and described in letters patent No. 51085 granted to Rathbone and Hailes as aforesaid.

8 3. Whether the defendant has not, within the last ten years, or some part thereof, at Albany aforesaid, or elsewhere in the United States or their Territories, manufactured and sold and are not now manufacturing and selling coal-heating stoves, an essential part or feature of which said stoves consists in the construction or arranging a perforated, slotted, or fingered fire pot, with a grate bottom, within a circular stove, having a provision for the admission of air below the point of suspension of said fire pot, substantially as shown, illustrated, and described in said Rathbone and Hailes' patent aforesaid.

4. Whether the defendant has not, within the last ten years, or some part and what part thereof, at Albany aforesaid, or elsewhere in the United States or their Territories, made and sold and are not now making and selling coal-heating stoves, an essential part or feature of which said stoves consists in the construction or arranging the combination of an annular horizontal suspended fire pot which has perforated, slotted, or fingered sides, substantially as

shown, illustrated, and described in the Rathbone and Hailes' patent aforesaid.

5. Whether the defendant has not manufactured and sold any, and, if any, how many, coal-heating stoves substantially embracing the invention as shown, illustrated, and described in said letters patent No. 51085 since January 1, 1866, and what profit has been derived or made therefrom by said defendant.

6. Whether the defendant has not manufactured and sold since the first day of January, 1866, one or more or how many coal stoves, known by the trade name of Fort Orange, or by any other trade name, made in accordance with said invention as aforesaid, the defendant has manufactured and sold since the first day of January, 1866, and what profit has been made or derived therefrom by said defendant.

9 Wherefore your orators pray that said defendant, agents, attorneys, clerks, workmen, and servants, each and every one of them, may be restrained and enjoined, as well preliminarily and provisionally as perpetually, from such infringement or the use of the invention to which your orators' said patent relates.

That said defendant may be decreed to render to your orators a true account of the gains and profits derived by it from the use of said invention, and also decreed to pay over to your orators any and all gains and profits by it acquired and all the damages your orators and their grantors and other owners have suffered by reason of the unlawful acts in violation of your orators' rights and the rights of their grantors or the rights of other owners, and in infringement of said letters patent, together with such increase over the actual damage sustained and in accordance with law and as may seem meet and just to this honorable court, and that the defendant may be decreed to pay the costs of this suit.

And that your orators may have such other or further order or relief in the premises as the nature of the circumstances of this case may require and to this honorable court shall seem meet and agreeable to equity.

To this end, therefore, may it please your honors to grant unto your orators a writ of injunction, issuing out of and under the seal of this honorable court, directed to the said The Albany Stove Company, enjoining, restraining, and inhibiting it and its officers, trustees, or directors and each and every of them, and its agents, attorneys, clerks, workmen, and servants, preliminarily and provisionally as well as perpetually, from making and selling any coal stoves which embodies the inventions to which your orators' said patent relates.

And may it further please your honors to grant unto your orators a writ of subpœna, issuing out of and under the seal of this
10 honorable court, directed to the said The Albany Stove Company, defendant, commanding it on a day certain to be and appear in this honorable court, then and there to answer all and

singular the premises and to stand to and abide such further order or decree as may be made against them.

And your orators will, as in duty bound, ever pray, etc.

The defendant is required to answer the interrogatories numbered 1, 2, 3, 4, 5, 6, respectively.

WILLIAM HAILES.
JAMES GRAY.
CHARLES SELKIRK.

T. G. YOUNGLOVE,
Solicitor and of Counsel,
44 North Pearl Street, Albany, N. Y.

UNITED STATES OF AMERICA, *District of New York,* } ss:

William Hailes, James Gray, and Charles Selkirk, being duly sworn, each for himself says that he is one of the complainants named in the foregoing bill of complaint, that he has read the said bill and knows the contents thereof, and that the same is true, except the matters therein stated to be alleged on his information and belief, and as to those matters he believes it to be true; and further says that he also believes that the letters patent upon which this bill is founded are in all respects good and valid.

WILLIAM HAILES.
JAMES GRAY.
CHARLES SELKIRK.

Subscribed and sworn to before me this 7th day of May, 1881.

[L. S.] RICHARD P. DUMARY,
Notary Public, Albany County, State of New York.

(Endorsed:) Bill of complaint. Filed May 9, 1881.

11 In the Circuit Court of the United States for the Northern District of New York.

MAY 9, 1881.

Present: The Honorable William J. Wallace, judge.

WILLIAM HAILES, JAMES GRAY and CHARLES SELKIRK *vs.* THE ALBANY STOVE COMPANY. } Equity 3198.

On filing bill of complaint in this cause, and on motion of F. G. Younglove, solicitor for the complainants—

Ordered that a writ of subpœna do issue out of and under the seal of this court, pursuant to the prayer of said bill, and that this cause be docketed for the said complainants.

12 The President of the United States of America to Albany Stove Company, Greeting:

You are hereby commanded that you personally appear before the judges of the circuit court of the United States for the northern

district of New York, in the second circuit, on the first Monday in June, 1881, to answer to a bill of complaint exhibited against you in said court by William Hailes, James Gray, and Charles Selkirk, and to do further and receive whatever said court shall have considered in that behalf; and this you are not to omit under the penalty of two hundred and fifty dollars.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the city of Utica, in said northern district, the 9th day of May, eighteen hundred and eighty-one.

[L. S.] WILLIAM H. BRIGHT, *Clerk.*

T. G. YOUNGLOVE, *Solicitor for Complainants.*

MEMORANDUM.—The defendant is to enter his appearance in the suit above mentioned in the clerk's office, at Utica, on or before the day at which the above subpœna is returnable; otherwise the bill may be taken *pro confesso.*

WILLIAM H. BRIGHT, *Clerk.*

13 UNITED STATES OF AMERICA, } *ss:*
Northern District of New York, }

I hereby certify that on the 16th day of May, 1881, at Albany, in my district, I personally served the within writ of subpœna on Wm. G. Shulz, secretary of Albany Stove Company, within-named defendant, by showing the same to him, with the seal of the court thereon, and at the same time delivering to and leaving with him a true copy thereof.

C. D. MACDOUGALL,
U. S. Marshal,
By JAS. H. KELLY, *Deputy.*

Fees, $7.70; p'd by comp's' sol.

(Indorsed:) Equity subpœna. Filed May 19, 1881. William H. Bright, clerk.

14 Circuit Court of the United States, Northern District of New York.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK
vs.
ALBANY STOVE COMPANY.

The clerk of this court will please enter my appearance as solicitor for the defendant in the above-entitled cause.

Dated Albany, June 4, 1881.

W. FROTHINGHAM,
Solicitor for Defendant, Albany, N. Y.

Wm. H. Bright, Esq., clerk, &c.

(Indorsed:) Precept for appearance. Filed June 6, 1881. William H. Bright, clerk.

15 Circuit Court of the United States, Northern District of New York.

JUNE 6, 1881.

Present: The Honorable William J. Wallace, judge.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK
vs.
THE ALBANY STOVE COMPANY.
} Eq. 3198.

On filing *præcipe* in this cause and on motion of Worthington Frothingham—

Ordered that his appearance as solicitor for the defendant herein be, and the same is hereby, entered, and that this cause be now docketed for the said defendant.

16 United States Circuit Court, Northern District of New York.

WILLIAM HAILES *et al. ag'nst* ALBANY STOVE COMPANY.

It is hereby stipulated that Esek Cowen be substituted for me as solicitor for the defendant in this action, and that an order be entered accordingly.

Albany, June 29, 1881.

W. FROTHINGHAM,
Defendant's Solicitor.

(Indorsed:) Stipulation for substitution of solicitor for def't. Filed Aug 17, 1881. William H. Bright, clerk.

17 In the Circuit Court of the United States for the Northern District of New York. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK,
Complainants,
against
THE ALBANY STOVE COMPANY, Respondent.

The answer of the above-named defendant to the bill of complaint of the above-named complainants.

The said defendant, for answer unto so much of said bill as it is advised it is necessary or material to answer, says:

That it is informed and believes, and therefore admits, that on the 21st day of November, 1865, letters patent of the United States were duly issued to Lewis Rathbone and William Hailes, in the said bill of complaint mentioned, for an alleged improvement in coal stoves, but whether or not the said letters patent were afterwards assigned to or are now owned by the said complainants the defendant

has no knowledge, and is not informed, except by said bill, and does not admit the said assignments or title, but leaves the complainants to make such proof thereof as they shall be advised.

And the said defendant, further answering, upon information and belief, denies that the said alleged invention is of any value or utility, and denies that it has ever been recognized or acquiesced in by the public or any portion thereof.

And the defendant, further answering, upon information and belief, denies that the said Lewis Rathbone and William Hailes were the original or first inventors of the devices described and claimed in the said letters patent, and avers that long before the said alleged invention of the said Rathbone and Hailes the said alleged inventions or material parts thereof claimed as new were described and shown in various letters patent of the United States of
18 America and foreign countries, and especially in the letters patent hereinafter specified, to wit:

Letters patent granted by the English government to Robert Russell, dated January 13th, 1857, No. 113.

Letters patent of the United States granted to Moses Bratt May 24th, 1864, No. 42833.

Letters patent of the United States granted to Zebulon Hunt, dated June 14th, 1864, numbered 43155.

Letters patent of the Kingdom of France granted to —— Fourner, dated April 30th, 1845, and numbered 817.

And the said defendant, further answering upon information and belief, avers that long before the alleged invention of the said Rathbone and Hailes stoves containing the same invention described and claimed in the said letters patent set forth in the bill of complaint or material parts thereof claimed as new were manufactured, sold, and publicly used by the following persons, to wit: Zebulon Hunt and William I. Miller, now residing in the city of Hudson, in the State of New York, who made and used the same at the city of Hudson aforesaid; Joseph C. Henderson, Gurdon G. Wolfe, James Morrison, George H. Phillips, and Esek Bussey, all of whom reside at the city of Troy, in the State of New York, and who made and used the said alleged invention at the city of Troy aforesaid; Samuel H. Ransom, of Albany, New York, who made and used the said alleged invention at Albany aforesaid; John H. Keyser, of the city of New York, who made and used the same at said city; W. H. Stran, of Baltimore, Maryland, who made and used stoves containing the said alleged invention at Baltimore aforesaid.

19 And the defendant, further answering, denies that it has at any time or place made, sold, or used any stoves containing any of the alleged inventions described and claimed in the letters patent set forth in the complainants' said bill of complaint, and denies that it has made any gains or profits from the use of said inventions or that it has infringed or threatens to infringe the said letters patent set forth in the said bill of complaint.

As to the several interrogatories proposed in the said bill of complaint, the said defendant makes answer as follows:

In answer to the first interrogatory it says that it is not informed

upon the subject, except by the said bill of complaint, and is unable to state whether or not the complainants have the title of the said letters patent granted to Rathbone and Hailes.

To the second interrogatory the defendant answers: No.

To the third interrogatory the defendant answers: No.

To the fourth interrogatory the defendant answers: No.

To the fifth interrogatory the defendant answers that it has not manufactured or sold any stoves such as are described in the interrogatory.

To the sixth interrogatory the defendant answers that it has not made or sold any stoves made in accordance with the invention referred to in the said interrogatory.

Wherefore the defendant prays that it may be hence dismissed with its costs in this behalf most wrongfully sustained.

JAS. H. CARROLL,
President Albany Stove Co.

ESEK COWEN,
Solicitor and of Counsel for Defendant, Troy, N. Y.

20 STATE OF NEW YORK, }
Northern District of New York, } *ss:*

James H. Carroll, being duly sworn, says that he is the president of the Albany Stove Company; that he has read the foregoing answer and knows the contents thereof, and that the said answer is true of his own knowledge, except as to the matters therein stated to be on information and belief, and as to those matters he believes it to be true.

JAS. H. CARROLL,
President Albany Stove Company.

Subscribed and sworn to before me this 10th day of August, A. D. 1881.

[L. S.] MICHAEL SCHRODT,
Notary Public, Albany, N. Y.

(Endorsed:) "Answer." Filed Aug. 18, 1881.

21 *Replication.*

Circuit Court of the United States for the Northern District of New York, in the Second Circuit. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK
against
THE ALBANY STOVE COMPANY.

The replication of the above-named complainants to the answer of the above-named defendants.

These repliants, saving and reserving to themselves, now and all times hereafter, all and all manner of benefit and advantage of ex-

ception which may be had to the manifold insufficiencies of said answer, for replication thereunto, say that they will aver, maintain, and prove their bill of complaint to be true, certain, and sufficient in law to be answered unto, and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by these repliants, without this, that any other matter or thing whatsoever in the said answer contained material or effectual in the law to be replied unto, and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied, is true; all of which matters and things these repliants will be ready to aver, maintain, and prove as this honorable court shall direct, and humbly pray as in and by their said bill they have already prayed.

T. G. YOUNGLOVE,
Solicitor for Complainants, 44 North Pearl St., Albany, N. Y.

(Endorsed:) Replication. Filed Sept. 5, 1881.

22 STATE OF NEW YORK, *Albany County,* } *ss:*

U. S. Circuit Court, Northern District of New York. In Equity.

WILLIAM HAILES *et al. vs.* THE ALBANY STOVE COMPANY.

Earl L. Stimson, being duly sworn, deposes and says that he resides at the city of Cohoes, in said county; that Truman G. Younglove, who was the solicitor for complainants in the above-entitled cause, died at his residence, in Crescent, N. Y., on the seventh day of September instant, and that deponent has been retained by the complainants as their solicitor in this cause in place and stead of said Younglove, deceased.

EARL L. STIMSON.

Subscribed and sworn to before me this 20th day of September, 1882.

[L. S.] ISAAC HILLER,
Notary Public, Albany County, New York.

(Indorsed:) Affidavit of Earl L. Stimson.

23 U. S. Circuit Court, Northern District of New York. In Equity.

WILLIAM HAILES *et al. vs.* THE ALBANY STOVE COMPANY.

The clerk of this court will please enter my appearance as solicitor for the complainants in the above-entitled cause.

Yours truly, EARL L. STIMSON,
Solicitor for Complainants, Cohoes, N. Y.

Dated September 20th, 1882.

(Indorsed:) Precept for entering appearance.

24 U. S. Circuit Court, Northern District of New York. In Equity.

WILLIAM HAILES *et al. vs.* THE ALBANY STOVE COMPANY.

On filing his affidavit of the 20th day of September, 1882, and the precept, both entitled in this cause, and on motion of Earl L. Stimson—

Ordered, That his appearance as solicitor for the complainants herein, in place of that of Truman G. Younglove, deceased, be, and the same is hereby, entered.

ALFRED C. COXE, *Judge.*

(Indorsed:) Order entering appearance. Filed Oct. 4th, 1882. William H. Bright, clerk.

25 U. S. Circuit Court, North. Dist. of New York. In Equity.

WILLIAM HAILES *et als. vs.* ALBANY STOVE CO.

And now come the complainants and enter their suggestion on the record of the fact of their having, on the 30th day of October, 1882, filed in the United States Patent Office their disclaimer relating to the first claim of the letters patent referred to in the bill of complaint herein.

Dated Nov. 11, 1882.

By their solicitor, EARL L. STIMSON.
By A. J. TODD, *Of Counsel.*

(Indorsed:) Suggestion of disclaimer. Filed Nov. 14, 1882. William H. Bright, clerk.

26 At a term of the circuit court of the United States held in & for the northern district of New York, at the court chambers in the city of Utica, on the 20th day of March, 1883.

Present: Hon. Wm. J. Wallace, circuit judge.

WILLIAM HAILES, JAMES GRAY, & CHARLES SELKIRK

vs.

THE ALBANY STOVE COMPANY.

The above cause having come on for final hearing upon pleading and proofs and after hearing the allegations and proofs of the respective parties and the arguments of their counsel and due consideration being thereupon had, and on motion of Esek Cowen, solicitor for the defendant, it is ordered, adjudged, and decreed, and this court by virtue of the power and authority therein vested doth order, adjudge, and decree, that the bill of complaint in the above-entitled action be, and the same is hereby, dismissed; and it is fur-

ther ordered, adjudged, and decreed that the above-named defendant have judgment against the above-named complainants for the amount of its costs in this suit, to be taxed, and that it have execution therefor.

WM. J. WALLACE.

(Indorsed:) Decree. Filed June 1st, 1883. William H. Bright, clerk.

27 And the costs having been taxed by the clerk at $623.46, the process, pleadings, and decree, together with other papers in said cause, are duly annexed hereunto.

Wherefore let the said defendant, Albany Stove Company, recover of said plaintiffs, William Hailes, James Gray, & Charles Selkirk, the sum of six hundred and twenty-three dollars and forty-six cents, costs herein as adjudged by said final decree, and this decree is duly signed and enrolled, pursuant to the rules and practice of the court, this 14th day of January, A. D. 1884, at 2 o'clock in the afternoon.

W. S. DOOLITTLE, *Clerk.*

(Indorsed:) Enrolled decree. Costs, $623.46; total, $623.46. Filed the 14th day of January, 1884, 2 o'clock p. m. W. S. Doolittle, clerk.

28 & 29 U. S. Circuit Court, North. Dist. of New York. In Equity.

WILLIAM HAILES *et al. vs.* ALBANY STOVE CO.

It is hereby stipulated and agreed that the printed records in this cause on the part of the complainants and defendant, containing the proofs, may be filed in the clerk's office of this court for and in place of the original written proofs and exhibits taken in the cause and be considered the same as the such original proofs.

ESEK COWEN,
Sol. for Def't.
EARL L. STIMSON,
Sol'r for Comp'ts,
By A. J. TODD, *of Counsel.*

(Indorsed:) Stipulation as to depositions and exhibits. Filed Sep. 24, 1884. W. S. Doolittle, clerk.

* * * * * * *

30 In the Circuit Court of the United States for the Northern District of New York. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK

against

THE ALBANY STOVE COMPANY.

Testimony for complainants taken by consent before Richard P. Dumary, a notary public in and for the county of Albany, New York, as special examiner, under the 67th rule of equity (as amended), to be used at the final hearing of the above-entitled cause.

ALBANY, N. Y., *October* 31, 1881.

Pursuant to notice, the parties in the above-entitled cause met at 44 North Pearl street, Albany, N. Y., on Monday, October 31st, A. D. 1881, for the purpose of proceeding with the examination of the witnesses on the part of complainants.

Present: T. G. Younglove, for complainants; C. D. Kellum, for defendant.

Counsel for complainants offers in evidence letters patent, bearing date the 21st day of November, A. D. 1867, No. 51088, granted to Lewis Rathbone and William Hailes for the term of seventeen years from Nov. 21st, 1865, for an improvement in coal stoves, and requests the examiner to mark the same "Complainants' Exhibit No. 1."

(Exhibit so marked.)

31 Also assignment, bearing date the 6th day of September, 1879, made by William Hailes, by which he assigned to James Gray all his right, title, and interest for invention in coal stoves, which assignment is recorded in Patent Office of the United States, in Liber R 24, page 107, transfer of patents, and requests the examiner to mark the same "Complainants' Exhibit No. 2."

(Exhibit so marked.)

Also assignment made by Lewis Rathbone to Rathbone, Sard and Company, bearing date July 16, 1880, recorded in the Patent Office of the United States February 14, 1881, in Liber L 26, page 91, of transfers of patents, whereby said Lewis Rathbone sold, assigned, and transferred unto said Rathbone, Sard and Company all his right, title, and interest in and to said invention, and in and to the letters patent therefor, and in and to all license fees or royalties under the letters patent aforesaid, and of and in and — all just, legal, and equitable claims for damages which he had for infringements, &c., &c., and requests the examiner to mark the same "Complainants' Exhibit No. 3."

(Exhibit so marked.)

Also assignment made by Rathbone, Sard and Company to James Gray and Alex. Selkirk, bearing date October 17, 1880, recorded in the Patent Office February 14, 1881, in Liber L 26, page 93, of transfers of patents, whereby said Rathbone, Sard and Company sold,

assigned, and transferred unto said Gray and Selkirk all their right, title, and interest in said invention, and in and to the letters patent therefor, and in and to all license fees or royalties under the letters patent aforesaid, and of, in, and to all just, legal, and equitable claims for damages which they had for infringements, &c., &c., and requests the examiner to mark the same "Complainants' Exhibit No. 4."

(Exhibit so marked.)

32 Also assignment made by Alex. Selkirk to Charles Selkirk, bearing date February 12, 1881, recorded in the Patent Office February 14, 1881, in Liber L 26, page 96, of transfers of patents, whereby said Alex. Selkirk sold, assigned, and transferred unto said Charles Selkirk all his right, title, and interest in and to said invention and in and to said letters pattent, and in and to all claims, royalties, and recoveries under said letters patent, and requests the examiner to mark the same "Complainants' Exhibit No. 5."

(Exhibit so marked.)

Also assignment made by James Gray to William Hailes, bearing date February 12, 1881, recorded in the Patent Office February 14, 1881, in liber 26, page 95, of transfers of patents, whereby said James Gray sold, assigned, and transferred unto said William Hailes his undivided two-thirds part of his three-fourths interest in and to said invention and the said patent, and in and to all claims, royalties, and recoveries under said patent, and requests the examiner to mark the same "Complainants' Exhibit No. 6."

(Exhibit so marked.)

It is hereby stipulated and agreed by and between the respective counsel that the foregoing patent and assignments being the originals that the same may be replaced by certified copies thereof, and each of said certified copies to be marked by the examiner as above requested.

Counsel for complainants offer in evidence a model alleged to have been constructed in accordance with letters patent granted to Rathbone and Hailes Nov. 21, 1865 (Complainants' Exhibit No. 1), and alleged to represent the coal stove shown and described in said letters patent No. 51085, and requests the examiner to mark the same "Complainants' Exhibit Rathbone and Hailes' Stove No. 7."

(Exhibit so marked.)

33 Also a stove alleged to have been manufactured and sold by the Albany Stove Company, having the trade name "Fort Orange," and requests the examiner to mark the same "Complainants' Exhibit Defendant's Stove No. 8."

(Exhibit so marked.)

ALEXANDER SELKIRK, being called as a witness in behalf of the complainants and being duly sworn, deposes and says, in answer to interrogatories propounded by T. G. YOUNGLOVE, of counsel for complainants, as follows:

1 Q. Please state your age, name, residence, and occupation.

A. Age, 51; name, Alexander Selkirk; Albany, N. Y.; occupation, solicitor of patents.

30 In the Circuit Court of the United States for the Northern District of New York. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK

against

THE ALBANY STOVE COMPANY.

Testimony for complainants taken by consent before Richard P. Dumary, a notary public in and for the county of Albany, New York, as special examiner, under the 67th rule of equity (as amended), to be used at the final hearing of the above-entitled cause.

ALBANY, N. Y., *October* 31, 1881.

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Present: T. G. Younglove, for complainants; C. D. Kellum, for defendant.

Counsel for complainants offers in evidence letters patent, bearing date the 21st day of November, A. D. 1867, No. 51088, granted to Lewis Rathbone and William Hailes for the term of seventeen years from Nov. 21st, 1865, for an improvement in coal stoves, and requests the examiner to mark the same "Complainants' Exhibit No. 1."

(Exhibit so marked.)

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(Exhibit so marked.)

Also assignment made by Rathbone, Sard and Company to James Gray and Alex. Selkirk, bearing date October 17, 1880, recorded in the Patent Office February 14, 1881, in Liber L 26, page 93, of transfers of patents, whereby said Rathbone, Sard and Company sold,

assigned, and transferred unto said Gray and Selkirk all their right, title, and interest in said invention, and in and to the letters patent therefor, and in and to all license fees or royalties under the letters patent aforesaid, and of, in, and to all just, legal, and equitable claims for damages which they had for infringements, &c., &c., and requests the examiner to mark the same "Complainants' Exhibit No. 4."

(Exhibit so marked.)

32 Also assignment made by Alex. Selkirk to Charles Selkirk, bearing date February 12, 1881, recorded in the Patent Office February 14, 1881, in Liber L 26, page 96, of transfers of patents, whereby said Alex. Selkirk sold, assigned, and transferred unto said Charles Selkirk all his right, title, and interest in and to said invention and in and to said letters pattent, and in and to all claims, royalties, and recoveries under said letters patent, and requests the examiner to mark the same "Complainants' Exhibit No. 5."

(Exhibit so marked.)

Also assignment made by James Gray to William Hailes, bearing date February 12, 1881, recorded in the Patent Office February 14, 1881, in liber 26, page 95, of transfers of patents, whereby said James Gray sold, assigned, and transferred unto said William Hailes his undivided two-thirds part of his three-fourths interest in and to said invention and the said patent, and in and to all claims, royalties, and recoveries under said patent, and requests the examiner to mark the same "Complainants' Exhibit No. 6."

(Exhibit so marked.)

It is hereby stipulated and agreed by and between the respective counsel that the foregoing patent and assignments being the originals that the same may be replaced by certified copies thereof, and each of said certified copies to be marked by the examiner as above requested.

Counsel for complainants offer in evidence a model alleged to have been constructed in accordance with letters patent granted to Rathbone and Hailes Nov. 21, 1865 (Complainants' Exhibit No. 1), and alleged to represent the coal stove shown and described in said letters patent No. 51085, and requests the examiner to mark the same "Complainants' Exhibit Rathbone and Hailes' Stove No. 7."

(Exhibit so marked.)

33 Also a stove alleged to have been manufactured and sold by the Albany Stove Company, having the trade name "Fort Orange," and requests the examiner to mark the same "Complainants' Exhibit Defendant's Stove No. 8."

(Exhibit so marked.)

ALEXANDER SELKIRK, being called as a witness in behalf of the complainants and being duly sworn, deposes and says, in answer to interrogatories propounded by T. G. YOUNGLOVE, of counsel for complainants, as follows:

1 Q. Please state your age, name, residence, and occupation.

A. Age, 51; name, Alexander Selkirk; Albany, N. Y.; occupation, solicitor of patents.

Q. 2. Will you state what advantages and facilities you have heretofore had by which you will be able to investigate, judge, and determine respecting the variations and resemblance or similarity in mechanical structures and of new and patented inventions?

A. Since 1864 I have been engaged obtaining patents, and have had many occasions to examine and compare mechanical structures and alleged inventions with patented inventions, and have been often called on to give opinions in reference to similarities and differences in mechanical structures shown and described in letters patent. Since 1869 I have made improvements in stoves a special study.

3 Q. Examine Rathbone and Hailes' letters patent No. 51085 and say whether or not you fully understand the construction and operation of the new and improved circular stove therein shown and described.

A. I have examined the said letters patent and I believe I understand the improvements shown and described therein.

34 4 Q. State whether or not you find the description therein so clear and explicit as to enable a person skilled in the art to which it relates to make and use the stove therein shown and described.

A. I find the stove shown and described in the letters patent mentioned to be sufficiently clear and explicit for the purposes named in the question.

5 Q. Compare Exhibit No. 1 with the model marked Exhibit No. 7 and state how you find it to compare with the stove shown and described in said Exhibit No. 1.

A. I have compared Exhibit No. 1, letters patent 51085, with the model, Exhibit 7, and I find that the said model substantially illustrates the stove shown and described in said letters patent, Exhibit No. 1.

6 Q. Examine and compare Exhibit No. 8 with the stove or invention represented or described in patent 51085, set up in the bill of complaint in this cause, and with the model, Complainant's Exhibit No. 7, representing said invention, and then state wherein you find said Exhibit No. 8 to vary from or resemble the stove or invention shown and described in said patent No. 51085, but especially having reference to the said invention set forth in the first and second claims of said patent.

A. Both complainants' and defendant's stoves are circular in form and may be said to be encased, suspended, perforated fire-pot stoves—that is to say, they are stoves in which the fire pot in each is encased by an outer wall arranged intermediate between the base section and the combustion-chamber section, as it is suspended from its upper end within said casing wall, and has its lower end portion made with vertical slots or openings and its upper end portions solid or closed. The lower end of the fire pot in each stove is provided with a grate bottom; openings are provided in the side walls of

35 each stove below the point of suspension of the fire pot for the admission of air to the same. In model, Exhibit 7, the fire pot marked in patent Exhibit 1 G is made of cast metal, with an

outwardly and upwardly flaring form, and with a diameter as to leave a free space, marked *d*, all around between it and the encasing or outer wall of the stove. Made with the upper marginal edge of the fire pot is a flange marked *c*, and made with the wall of the stove, at the base of the fire or combustion chamber marked C, is a flange or ledge marked *b*. From this flange or ledge *b* the cast-metal fire pot is suspended by means of flange *c*, made with it. These two flanges *b* and *c* co-operate together in two directions—in one direction they operate to hold the fire pot suspended from its upper end, so that it may expand and contract in a vertical direction, when heated and cooled, without in the least affecting any of the other parts of the stove, and in another direction these flanges operate to effectually close the upper portion of the space *d* surrounding the fire pot, so that no air can pass in that direction from said space into the fire or combustion chamber C above the fire pot.

The fire pot G extends from the fire or combustion chamber C down into the chamber marked B, and has arranged with its lower end an open grate marked *g*.

The upper half or portion of this suspended fire pot is made imperforated or solid, while the lower portion is made with vertical openings through its sides for admission of air above the plane of the grate into the body of the coal into the fire pot. Made in the encasing walls of the fire pot are two sets of openings for admission of air to the fuel in fire pot G, both of which sets of openings are below the flange *c* of the fire pot, from which the same is suspended. One of said sets of openings consists of a series of apertures provided with a corresponding register plate, *i*, and arranged opposite the
36 vertical openings in the fire pot; the other opening for the admission of air is made in the side of the wall of chamber B and between the ash pit door and the first-mentioned sets of openings.

In Exhibit 8 (defendant's stove) I find the same elementss or part arranged and combined in substantially the same manner. The fire pot is made of cast iron with an upwardly and outwardly flaring form and with such a diameter as to leave a free space all around between it and its encasing wall, which space corresponds with space *d* in patent 51085 and the model.

In Exhibit 8 the fire pot is suspended by a flange, made with its upper end edge from a flange made with a plate forming substantially a part of the wall of the stove and at the base of the combustion chamber. The said two flanges (the one made with the upper end of the fire pot and the other with the wall of the stove) co-operate together the same as flanges *b* and *c* in patent, Exhibit 1, and model, Exhibit 7, to hold the fire pot suspended so that it may expand and contract in a vertical elevation without affecting the other parts of the stove, and also to close the upper portion of the space around the fire pot so that no air can pass in that direction into the combustion chamber or fire chamber above.

In Exhibit 8 the fire pot extends down into the chamber below the combustion chamber and has arranged at its lower open end a

grate bottom which corresponds with the grate *g* in letters patent, Exhibit 1, and model, Exhibit 7.

In defendant's stove, Exhibit 8, the upper half or portion of its suspended fire pot is made solid or imperforated, while its lower portion is made with vertical openings through its sides for admission of air above the plane of the grate into the body of coal in the fire pot, the same as in patent, Exhibit 1, and model, Exhibit 7.

In defendant's stove (Exhibit 8) there are provided two sets
37 of openings, through either of which air is admitted to the fire pot, both of which sets of openings are located below the plane of the flanges from which the fire pot is suspended; one set of said openings is made in the door of the ash pit or chamber corresponding with chamber B in patent, Exhibit 1, and the other consists of a series of openings made in the wall of the stove between the flanges from which the fire pot is suspended and the ash pit door; these openings (in like manner as the openings as shown in patent, Exhibit 1, and model, Exhibit 7) admit air to the fuel in the fire pot below its point of suspension.

In a comparison of defendant's stove, Exhibit 8, with letters patent, Exhibit 1, and model, Exhibit 7, I find that the elements and parts which I have described as being found in both stoves to be identically the same, and I also find them to be arranged in identically the same manner and with like results.

In complainants' patent, Exhibit 1, and model, Exhibit 7, the grate marked *g* is connected with the lower end of the fire pot, while in defendant's stove (Exhibit 8) the grate is supported from the side walls of the stove; this change of manner of support of the grate in defendant's stove is merely formal, and, so far as the functions of the grate (as a device for supporting the fuel and admitting air to the same) is to be considered, they are substantially the same.

In complainants' patent, Exhibit 1, and model, Exhibit 7, the bars between the vertical slots made in the sides of the lower portion of the stove are connected together at their lower ends by a ring cast solid with them, while in defendant's stove, Exhibit 8, this is omitted; this change is, in my opinion, merely formal, as without or with the ring the openings or vertical slots in the fire pot will operate the same in both cases.

In complainant's patent, Exhibit 1, and model, Exhibit 7,
38 the annular register is arranged in nearly a horizontal position and opposite the vertical slots in the fire pot, and is made in one continuous piece, with its apertures so arranged in relation to the apertures in the plate below that by a movement of the plate in one direction the apertures in the wall of the stove will be opened and a reverse movement will close them, while in defendant's stove (Exhibit 8) the openings in the wall of the stove opposite the vertical slots are arranged in the vertical portion of the wall of the stove and opposite the vertical slots, and are opened and closed by individual sliding plates, which serve the same purpose as the register plate in complainant's stove and patent, Exhibit 1, and model, Exhibit 7, and they also serve as a means for access to the vertical openings with a poker when required. This change I regard as not

being a substantial one, as in both stoves these apertures, when opened, will admit the passage of air into the fire pot through the vertical slots.

In both stoves the mode of operation I regard to be identically the same. The fire is kindled in the perforated fire pot, which is then filled up to its top. When the draft openings are opened air will enter into the chamber in which the fire pot is suspended, and one portion of the air will enter the fire pot in a vertical direction through the openings in the grate bottom, while another portion will enter the fire pot in another direction through the vertical slots or openings in the sides of the fire pot, and thence pass vertically upward through the body of the fuel therein in lines nearer to the inner circumferential surface of the fire-pot than the portion of air which passes upward through the horizontal grate below.

In both stoves the flanges at the upper end of the fire pot prevent the passage of air from the chambers surrounding the fire pot up into the combustion chamber, and compel all the air to pass through the fuel in combustion.

39 In both stoves the solid portions of the fire pot above its vertical openings operate to hold the stratas of fuel massed together with a depth which prevents the air (passing directly into the fire pot through the vertical openings) from escaping into the combustion chamber above the fire pot without first passing through fuel, and thereby causes the air through the said openings or slots to contribute to the more perfect combustion of the liberated gases from the fuel before they reach the top surface of the same.

In both stoves the vertical slots or openings in the sides of the lower portion of the fire pot operate as a means for supplying the oxygen of the air to the fuel in combustion at points considerably above the plane of the openings in the grate bottom, so that while the openings in the grate bottom admit oxygen for the perfect combustion of the fuel and its liberated gases in the lower portion of the fire pot, the vertical openings or slots admit another and larger portion of oxygen for causing the perfect combustion of the fuel and its liberated gases confined within the upper and imperforated portion of the fire pot.

In both stoves, when the lowermost draft openings are opened, a large portion of the air admitted into the chamber surrounding the fire pot will pass into the fuel in combustion through the grate, and the remainder will enter the body of the fuel through the vertical openings of the fire pot. When the annular register in complainants' patent, Exhibit 1, and model, Exhibit 7, and the horizontal openings opposite the vertical slots in the fire pot of stove, Exhibit 8, are opened the greater portion of the air admitted into the chambers surrounding the fire pot in the respective stoves will pass directly into the fuel in the fire pot through the vertical slots or openings, and but a small portion, if any, of the air will enter the body of the fuel through the openings of the grate.

40–48 In defendant's stove, Exhibit 8, there is employed, in addition to the devices and parts I have just described and

compared in said Exhibits 1, 7, and 8, a fuel magazine which is not shown in Exhibit 1 or 7.

Excepting in this addition of the fuel magazine in defendant's stove, Exhibit 8, I have mentioned, the stoves which I have described and compared are substantially the same, and the arrangements and devices or elements and their modes of operation and the results produced I regard as being substantially the same in both stoves, and especially as regards the parts or elements referred to in both the 1st and 2d claims of letters patent 51085 (Exhibit 1).

Recess until 2 o'clock.

* * * * * * *

49–64 Circuit Court of the United States, Northern District of New York. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK

against

THE ALBANY STOVE COMPANY.

Rebuttal testimony on part of complainants, taken by consent before Richard P. Dumary, notary public, as special examiner, under the 67th rule of equity (as amended), to be used at the final hearing of the above-entitled cause.

* * * * * * *

65 ALBANY, N. Y., TUESDAY, *March* 14, 1882.

Hearing resumed.

Present: T. G. Younglove, for complainants; Esek Cowan, for defendant.

ALEXANDER SELKIRK, being recalled, in answer to interrogatories propounded by Mr. YOUNGLOVE, of counsel for complainants, testifies as follows:

Q. 25. Are you the same Alexander Selkirk who appeared and was heretofore sworn and examined for complainants in this cause?

A. I am.

Q. 26. I place before you letters patent No. 9297, granted to Alexander Harrison October 5th, 1852, and marked "Defendant's Exhibit Harrison Patent." Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent mentioned in the question and I believe I fully understand the stove shown and described therein.

Q. 27. Please compare the stove shown and described in "Defendant's Exhibit Harrison Patent" with the stove shown and described in Rathbone and Hailes' patent, No. 51085, and marked "Complainants' Exhibit No. 1," and defendant's stove Fort Orange ("Complainants' Exhibit No. 8"), and especially in reference to the fire pots, grates, and draft openings employed in those stoves, and state

how you find those parts in "Exhibit Harrison Patent" compare with those parts in the stoves in "Complainants' Exhibits 1 and 8"?

A. I find on an examination of the stove shown and described in "Exhibit Harrison Patent" that it is an ordinary cylinder stove, and is composed of a cylinder of common form of construction, mounted on a plate forming the upper wall of the chamber
66 or ash pit. This cylinder is marked A in the drawings. The lower end of this common cylinder terminates at the plate on which it rests, and a portion of this supporting plate projects "inwardly" (the specification says) "about three or four inches all around the stove," so as to form a ledge at the lower end of the cylinder. From the inner edge of this ledge thus formed by the inwardly projecting portion of the top plate of the ash pit and draught chamber is suspended a relatively small vertical grate, which the specification describes as being "about two inches high, with spaces between." Through these spaces air is admitted within the small vertical grating.

I also find a horizontal grate of smaller diameter than that of the vertical grate hanging in the ash pit chamber and arranged within the lower open end of this vertical grating. This grate has its bearing on a vertical pin, central in a bar supported from the side walls of the ash pit. Made with the lower side of this horizontal grate are a series of cogs into which work a mitre gear connected with a shaft and provided with a crank by which the mitre wheel may be revolved and thereby effect a revolution of the horizontal grate.

In comparing the construction and purposes of the several parts in the stove mentioned in the question I do not find in the stove shown and described in the patent in suit and defendant's stove Fort Orange any parts which correspond with the parts employed in the Harrison stove, excepting it be the grate, which grate is substantially the same in all three stoves mentioned in their purposes and uses for holding the fuel from falling down and permitting ashes to fall from the fire pots into the ash pit and admitting air to the fuel in combustion in the stove.

In the stove in the patent in suit (Complainants' Exhibit 1) and in defendant's stove Fort Orange (Complainants' Exhibit 8) there is employed in each a fire pot suspended from the outer wall of the stove. In the Harrison stove there is no suspended fire pot,
67 the outer wall of the stove being the wall of the fire cylinder against which the fuel burns.

In the stove in the patent in suit and Fort Orange stove the fire pots are each made with a solid upper portion or zone in the solid connection with a grated lower portion or zone.

In the Harrison stove the fire cylinder has no connection with the vertical grating, and is not only separated from the vertical grating, but is set (according to the specification) from three to four inches out from a vertical range with the vertical sides of the vertical grating.

In the stove in the patent in suit and Fort Orange stove the upper solid portion or zone of their respective fire pots operates not only to hold the body of the fuel in complete enclosure at its sides, but

also operates to highly heat the air admitted to the draught chamber surrounded by their outer encasing walls. In the Harrison stove the outer wall of the stove itself encloses the body of the fuel to be burned within, but it does not operate to heat the air of the draught chamber before its entrance into the body of the fuel.

In the stove in the patent in suit and Fort Orange stove their fire pots are each made to serve to limit the charge of fuel to be burned, and also operate, by means of their flaring sides, to produce a larger area of upper surface of burning fuel, from the same measure of fuel, than can be had in the Harrison stove when the same depth of fuel is used.

In the stove in the patent in suit and the Fort Orange stove the outwardly and upwardly flaring forms of their fire pots operate to prevent the ascending currents of heated products from impinging on the metal walls, and are thereby made capable of lasting much greater length of time than will a fire cylinder with vertical sides like in the Harrison stove. These flaring sides also operate to retain, on their inner surfaces, an amount of ashes sufficient to pre-
68 vent the fuel from resting directly in contract with the metal walls, while the vertical sides of the fire cylinder of the Harrison stove readily permit the ashes to fall down as fast as formed, so that the burning particles of fuel will have immediate contact with the inner surfaces of the fire cylinder.

These differences which I have pointed out in the form of construction, purposes, and functions of the several parts or elements of the stoves which I have compared are to me evidences that the Harrison stove as shown and described in "Defendant's Exhibit Harrison Patent" does not embody in its structure any parts corresponding with the suspended, partly solid, and partly slotted fire pots as are shown to be employed in the stove in the patent in suit and defendant's stove Fort Orange.

Recess until 1.30 p. m.

Afternoon Session.

The examination of Mr. SELKIRK was resumed at 1.30 o'clock p. m. by Mr. Younglove.

(Answer to question 27 concluded:) I further find in the Harrison patent there is not shown in the drawings nor described in the specifications any draught openings through which air could be admitted to the draught chamber for passage thence through the fuel in the cylinder, although I suppose draught openings of some kind were provided.

Q. 28. State whether or not the vertical grating marked *d d* in the Harrison patent corresponds, as a device, with the slotted zone forming the lower portion of the perforated fire pot shown and described in the stove in the patent in suit.

A. In my opinion the vertical grating marked *d d*, whether considered separately or in connection with the cylinder A in the

Harrison patent, does not correspond, as a device, with the
69 slotted zone forming the lower half or portion of the fire pot G in the stove in the patent in suit.

My reasons for this opinion are these: The vertical grating *d d* in the Harrison stove when operating to admit air through its openings admits air to the sides of the fuel only when the horizontal grate is cleared from ashes, while in the stove in the patent in suit the vertical slots of the lower zone of fire pot G not only admit air to the sides of the base of the fuel when the grate is cleared from ashes, but also to the sides of the middle zone to the body of the fuel in the fire pot.

Another reason is that in the Harrison stove the slots in the vertical grating are practically inoperative for admitting of a free passage of air to the body of the fuel when an accumulation of ashes to the depth of, say, two inches has accumulated on the grate after a free burning of the fuel for two or three hours, while the slots of the grated zone of the fire pot of the stove in suit are practically operative as devices to admit a sufficient supply of air to the base of the fuel above the ash zone (formed by the accumulation of ashes after from six to ten hours' use) for continuing the supply of air for the support of combustion of fuel.

Q. 29. Do you find in "Defendant's Exhibit Harrison Patent" anything shown in the drawings or described in the specification which leads you to the opinion that the cylinder marked A was intended to be lined with fire brick so that its inner surface of fire-cylinder wall will be on a vertical line with the walls of the vertical grating *d d*?

A. I do not find anything either in the drawings or in the specification which suggests that such fire-brick lining is to be used. The drawings show a ledge marked *b*, which ledge is described as projecting "inwardly about three or four inches all around the stove." With such an extension of projection of this ledge the fire brick used, if used at all, would require to be from three to
70 four inches thick to bring the inner surface of the lined cylinder out to a vertical line with one drawn on a vertical line with the sides of the vertical grating *d d*. If such lining was used the three or four inches of thickness would practically prevent the side walls so lined from operating as radiating plates for assisting in warming an apartment.

I believe that if it was the intention of Harrison to use a fire-brick lining he would have so stated and shown it in his patent and would have stated that the ledge *b* was to be extended inwardly at a distance equal to the thickness of the brick used.

Q. 29½. I place before you letters patent No. 25128, granted to John Magee August 16, 1859, and marked "Defendant's Exhibit Magee Patent." Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent mentioned in the question and I believe I fully understand the stove shown and described therein.

Q. 30. Please compare the stove shown and described in "Defend-

ant's Exhibit Magee Patent" with the stove shown and described in Rathbone and Hailes' patent, No. 51085, and marked "Complainants' Exhibit No. 1," and defendant's stove Fort Orange ("Complainants' Exhibit No. 8"), and especially in reference to the fire pots, grates, and draught openings employed in those stoves, and state how you find those parts in "Exhibit Magee Patent" compare with those parts in the stoves in Complainants' Exhibits 1 and 8.

A. I have examined the stove shown and described in "Defendant's Exhibit Magee Patent" and compared the same with the stove in the patent in suit and defendant's stove Fort Orange.

The stove shown in the Magee patent is circular in form, as is also the other stoves mentioned in the question.

71 I find that in each of the stoves in question there is employed a horizontal grate at the lower end of each fire pot for the purpose of holding the body of the fuel from falling down and admitting air to the fuel in combustion, and also for passage of ashes from the fire pot down to the ash pit. These grates in the stoves mentioned in the question are, for the above reason, substantially the same.

I don't find in the Magee patent either shown or described any means operating as draught openings for admitting air to the draught chamber, except it be the ash pit door.

In the Magee patent the fire pot A is described as being "a grated fire pot of circular form and being composed of a series of bars, *a a*, &c., arranged at equal distance apart so as to have spaces between them. These bars extend upward from a horizontal ring grate and terminate at their upper ends in a ring or annulus, C, from which a partition ring, B, extends to the case E of the stove." * * *

The outer case referred to forms the walls of the Magee stove, between which wall and the grated fire pot there is a free space all around. The plate marked D operates to separate the chamber surrounding the grated fire cylinder from the combustion chamber above the same.

This grated fire cylinder in the Magee stove does not correspond with the fire pots either in the stove in the patent in suit or stove Fort Orange in its form of construction, modes of operation, and effects produced by its use, for the reason—

That in this Magee stove the fire cylinder is not made with a flaring form for increasing the area of the top surface of the fuel as do the flaring forms in the fire pots in the stove in the patent in suit and the Fort Orange stove.

Another reason is that in the Magee stove the fire cylinder has no solid upper portion or zone operating to closely envelope all the sides of the upper half or portion of the body of the fuel so

72 that air will be excluded from passing into the same through its sides of said upper portion as have the fire pots in the stove in the patent in suit and the Fort Orange stove.

Another reason is that the slots in the Magee fire pot extend from the bottom to the top of the fire cylinder proper, so that air passing through the slots from the surrounding chamber will readily have free passage through the upper portions of the slots to the combus-

tion chamber above the fire pot without contributing to any great extent to the combustion of the fuel within; while on the contrary the vertical slots of the grated half or zone of the fire pots in the stove in the patent in suit and in the Fort Orange stove extend upward to a distance far short of the upper end of the respective pots, so that while these slots in the lower and grated zone are made to admit a large measure of supply of air to the fuel when ashes have accumulated on the grate to a considerable depth, no air will be permitted to pass through the upper ends of these slots to escape into the combustion chamber above the fire pot, as in the Magee stove, but the air will be made to pass into and through the upper zone of the body of the fuel surrounded by the solid portions of the fire pots in the stove in the patent in suit and the Fort Orange stove to cause a rapid combustion of the fuel in the same.

In the Magee stove the air passing through the upper ends of the slots of the fire cylinder will operate to lessen the combustion of the fuel in the same, and will reduce the temperature of the heated products of combustion escaping from the upper surface of the fuel. In the stove in the patent in suit and stove Fort Orange, the air passing into the upper zone of the fuel, surrounded by the solid portions of their fire pots, through the upper ends of the vertical slots in those fire pots, will wholly enter into the body of the fuel and effect a high combustion of the same, and cause the hot products of
73 combustion, escaping from the top of the fire pot, to be at a higher temperature than can possibly be had in a stove having a grated fire cylinder, as shown and described in the Magee patent.

Q. 31. What is the purpose of the piece called "the annulus C" in the Magee patent, which is above the grated fire pot?

A. From the drawings, Figure 2, in the patent, and from the description in the specifications it is evident that the grated fire pot in the Magee stove is wholly formed, from bottom to top, by the vertical bars *a* arranged apart to have spaces between them. The ring grate below operates to hold the lower ends of the bars in place, while the piece called "the ring or annulus C" simply operates as a device for holding the upper ends of the vertical bars in position, and at the same time operates as a guard to prevent the coal from being spilled over on plate D. This plate called "annulus C" is shown in the drawing, Figure 2, to be extended outward to the feed door of the stove so as to operate as a portion of the guard to prevent the scattering of coal over plate D when being introduced into the stove.

Q. 32. I place before you letters patent No. 12382, granted to James Easterly February 13, 1855, and marked "Defendant's Exhibit Easterly Patent." Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent named in the question and I believe I fully understand the stove shown and described therein.

Q. 33. Please compare the stove shown and described in "Defendant's Exhibit Easterly Patent" with the stove shown and described in Rathbone & Hailes' patent, No. 51085 (and marked "Complain-

ants' Exhibit No. 1"), and defendant's stove Fort Orange ("Complainants' Exhibit No. 8"), and especially in reference to the
74 fire pots, grates, and draft openings employed in those stoves, and state how you find those parts in "Exhibit Easterly Patent" compare with those parts in the stoves in "Complainants' Exhibits Nos. 1 and 8."

A. I have examined the stove shown and described in the Easterly patent and find that there is employed with the Easterly stove an annular horizontal register and a fire chamber formed by a solid enclosing wall, made continuous with the base of the fuel magazine and supported from the base of the stove. This fire chamber forms the outer wall of the stove, and the annular register is arranged on the top wall of said fire chamber, and is intended to admit air into the body of the fuel in the fire chamber from its upper end, the draught of the air in this stove being intended to be downward from the top of the body of the fuel and through the same to the bottom thereof, and thence outward to the exit.

There is not shown or described in the Easterly patent any form of fire pot, but only an enlarged base of the fuel magazine, which enlarged base is not slotted in any of its parts. In the stove in the patent in suit the horizontal annular register is arranged with the walls of the draught chamber surrounding the fire pot, and serves as a means for supplementing the supply of air admitted through the draught door below the plane of the grate in that stove when a more rapid combustion of the fuel is desirable to be had than can be obtained through the lower draught door. It also admits the air into the draught chamber at points directly opposite the slots of the grated zone of the fire pot.

The Easterly register is used with a different device and for a different purpose, and does not operate to effect the same results as is had by the use of the register plate in the stove in the patent in suit or the equivalent individual draught openings and their individual plates opposite the slots in the lower zone of defendant's stove, Fort Orange.

Adjourned until to-morrow at 10 o'clock a. m.

75 ALBANY, N. Y., WEDNESDAY, *March 15th*, 1882.

The examination was continued at 10 o'clock a. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Direct examination of ALEXANDER SELKIRK resumed:

By Mr. YOUNGLOVE:

Q. 34. I place before you letters patent No. 48115, granted to William B. Treadwell June 6, 1865, and marked "Defendant's Exhibit Treadwell Patent." Examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent mentioned in the question, and I believe I fully understand the stove shown and described therein.

Q. 35. Please compare the stove shown and described in "Defendant's Exhibit Treadwell Patent" with the stove shown and described in Rathbone and Hailes' patent, No. 51085, and marked "Complainants' Exhibit No. 1" and defendant's stove Fort Orange ("Complainans' Exhibit No. 8"), and especially in reference to the fire pots, grates, and draught opening employed in those stoves, and state how you find those parts in the Treadwell patent compare with these parts in "Complainants' Exhibits 1 and 8."

A. I have examined the stoves mentioned and compared the Treadwell stove with complainants' stove in the patent in suit and defendant's stove Fort Orange (Exhibit 8), and find that the stove in the Treadwell patent has no side-grated fire pot, but has in fact a composite fire pot, which is substantially and practically a solid fire pot from bottom to top. This Treadwell fire pot is formed
76 in its lower part of vertical plates or cylinders placed close together as is shown in drawings, figures 1 and 2, and its upper part is of cast iron, lined with fire brick. The inventor describes this composite fire pot in language as follows: "C is the fire chamber, the lower section *e e* of which is made of cast iron, and the upper section *f f* is made of fire brick, which in position stand against and are supported by the plate or cylinder *b*. The cast iron section *e e* has a brim, *h h*, with flanges formed upon it to hold in position the plates or cylinder *d b*, and through which brim openings *i i* are formed for the purpose of admitting cold air into cavity *g*. Grooves or channels are formed in the upper surface of the brim, through which air is conveyed underneath the brick into the fire at points *n n* to assist in the burning of the gases."

By this description in the specification in connection with the drawings, it is apparent that the Treadwell fire pot is practically a solid one, and one supported from the base of the stove and having its lower half formed by cast-iron plates with room for expansion, when heated, so as to close when hot; and its uppor portion by fire brick which is enclosed about by an air chamber through which air, when heated, is passed upwards to be introduced in thin sprays over the top surface of the burning fuel.

My opinion as to the solidity of this Treadwell fire pot is fully sustained, I believe, by the language of the specification, which reads as follows:

"I would state that I prefer to make the fire pot with the lower section not lined, as represented in figures 1 and 2, as this construction radiates more heat at the lower part of the stove, but in some cases the fire pot may be made entirely of fire brick, as illustrated in figure 9."

In examining figure 9 I find it illustrates a section of a solid walled and fire-brick-lined fire pot.

77 From my examination of the drawings and a reading of the specifications (in connection with the drawings), it is evident to me that in the Treadwell patent a solid fire pot only is employed, although it is made and composed of sections or parts.

This solid fire pot does not in the least correspond in form or construction and arrangement of its several elements or factors with the perforated fire pot, its elements and factors composing the same, and shown and described in the complainants' patent in suit, and in defendant's stove Fort Orange.

In the Treadwell stove air is admitted into the ash pit from a draught door in the front of the stove, and thence into the solid fire pot through a horizontal grate forming the bottom of the fire pot.

There is also provided flues, marked O, extending from the lower plate of the base of the stove to and through the upper plate of the same for the passage of air from below the base, and outside the stove to the chamber surrounding the solid fire pot, in which chamber the air is somewhat heated when it finds passage from thence into a second heating chamber arranged concentric to the upper half of the walls of the fire pot to be more highly heated, when the air will have passage in an inclined direction in small streams or sprays into the combustion chamber immediately above the upper surface of the fuel in the fire pot.

In the above described form of construction and arrangement of the draught openings for admitting air to support combustion, no air is admitted for having passage through a series of vertical slots made in the sides of a perforated fire pot as in the stove in the patent in suit.

Q. 35. I place before you English letters patent granted Robert Russell January 13, 1857, No. 113, and marked "Defendant's Exhibit Russell Patent." Please examine the same and state
78 whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent mentioned in the question and I believe I fully understand the stove shown and described therein.

Q. 36. Please compare the stove shown and described in Defendant's Exhibit Russell Patent with the stove shown and described in Rathbone and Hailes' patent, No. 51085 ("Complainants' Exhibit No. 1"), and defendant's stove Fort Orange ("Complainants' Exhibit 8"), and especially in reference to the fire pots, grates, and draft openings employed in those stoves, and state how you find those parts in "Exhibit Russell Patent" compare with those parts in the stoves in Complainants' Exhibits 1 and 8.

A. I have examined and compared the stove shown in Russell English patent with that shown in the complainants' patent in suit (Exhibit 1) and defendant's stove Fort Orange (Exhibit 8) and find that there is not employed in the first-mentioned stove the same character of devices and factors which are made to compose the stoves in the last two mentioned exhibits.

In the Russell patent there are shown two forms of construction of the Russell stove, and the specification describes two minor modifications of those illustrated by the drawings. In one of these forms of construction shown, and also described, is a stove having a grated-sided fire dish, which is marked A, and a fuel reservoir marked M, both of which are enclosed about by an outer wall. The grated fire

dish in the Russell stove is composed of a number of grate bars with openings between for the admission of air to the interior of the dish. Describing this fire pot the specification says:

"These bars may be fixed at their top to ring B and at their bottoms to a plate, C, having a pivot, D, formed or cast on it; the
79 pivot D is inserted in a hole in plate E in which it is free to turn."

The drawings do not show that in this form of construction the fire dish is suspended from its upper end.

In the stove in the patent in suit and defendant's stove Fort Orange the fire pots are each shown to be suspended at their upper ends by a continuous flange from a continuous flange made with the outer wall of the stove in each case. These stoves also show that their fire pots are each made with a solid upper portion or zone for closely enclosing the upper half of the fuel in the fire pot and a grated or slotted lower zone which will hold together the lower half of the body of the fuel, and at the same time permit air to enter at the sides of the fire pot at all points up to the plane of the upper ends of the slots in the fire pots. These features of construction embodied in the fire pots in complainants' and defendant's stoves are neither shown or described in the Russell patent as being employed in the fire pot of that stove.

I find that the second form of construction shown and described in the Russell patent is a circular grated fire pot or cylinder, similar to that shown and described in "Defendant's Exhibit Magee Patent." This second form of fire cylinder is formed of a series of vertical tubes or bars, "set in a ring at top and another at bottom." These tubes or bars are marked D and upper ring *e* and the lower ring *f*. The specification says:

"The lower ring *f* may be formed in a piece with the bottom of the fire basket and may be made solid or with apertures having a pivot *i* formed on it to take into a hole on plate *j*, on which pivot it may be moved or turned."

This second form of fire pot in the Russell patent does not in the least correspond with the suspended perforated fire pot in stove shown in patent in suit or in the stove Fort Orange.

80 Russell, however, describes a modification which may be made by which the fire dish may be suspended instead of supported, as shown, for he says in his specification as follows:

"Instead of making the fire dishes to turn on a pivot, as previously described, I sometimes hang them by a projection or flange formed on the upper ring of fire dish A, which flange rests upon a corresponding projection on the inside of the casing, as shown in dotted lines at *k k*, figures 1 and 2."

It is plain to me that when this modification of manner of supporting the fire dish in the Russell patent is resorted to it would not produce a grate bottom in lieu of the solid central base portion connected with the lower ends of the grate bars of the fire dish, nor produce a fire pot which would have a solid upper portion or zone adapted to enclose closely around the upper half or body of the fuel in the fire dish.

It is also evident to me that in this modification of a suspended grated fire dish that the air (or a large portion of the air) passing from the chamber surrounding the fire dish would pass through the upper end portions of the slots directly into the combustion chamber above the fire pot without any great measure of air entering into the body of the fuel, while in the stove in the patent in suit and stove Fort Orange the air passing from the draught chamber in each case would enter into the sides of the body of the fuel at points below the upper half of the body of the fuel and have diverse directions of passage through the intercesses between the particles of fuel in the upper half in the body of the same.

With the Russel fire pot the passage of air through the upper end portions of the slots of the fire basket A over the top surface of the fire would greatly lessen the combustion of the fuel in the
81 dish and greatly lower the temperature of the products of combustion passing off from the upper surface of the fire. While, on the contrary, by reason of the form of construction of the perforated fire pots in the stove in the patent in suit and defendant's stove Fort Orange, the air being made in each case to pass into the body of the fuel below the base of the upper half or portion of the same will greatly increase the combustion of the fuel in the fire pot and raise the temperature of the products of combustion at the upper surface of the fire, and thereby more effectually heat the several plates of the stove intended to operate as radiators for warming an apartment.

For the above-stated reasons I am of the opinion that the grated fire dish in the Russell stove, whether supported from its base or suspended from its uper base, is not a device of the same kind or character as the perforated fire pots in the stove shown in the patent in suit and in defendant's stove Fort Orange.

Recess until 1.20 o'clock.

Afternoon Session.

The examination of Mr. SELKIRK was resumed at 1.30 o'clock.

By Mr. YOUNGLOVE:

Q. 37. I place before you letters patent No. 43155, granted to Zebulon Hunt June 14th, 1864, and marked Defendant's Exhibit, Hunt Patent. Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in said exhibit.

A. I have examined the patent mentioned in the question and I believe I fully understand the stove shown and described therein.

Q. 38. Please compare the stove shown and described in
82 Defendant's Exhibit Hunt Patent with the stove shown and described in Rathbone and Hailes' patent No. 51085 (Complainants' Exhibit No. 1), and defendant's stove Fort Orange (Complainants' Exhibit No. 8), and especially in reference to the fire pots, grates, and draught openings employed in those stoves, and state

how you find those parts in Exhibit Hunt Patent compare with those parts in the stoves in Complainants' Exhibits 1 and 8.

A. I have examined and compared the stove shown and described in the Hunt patent with the stoves shown and described in the patent in suit and defendant's stove Fort Orange.

I find that each of the stoves above named belong to the class of stoves known as "circular stoves."

The Hunt stove is composed of a base section, a draught-chamber section, in which is suspended a grated fire pot or basket, and a combustion-chamber section, from the upper part of which is suspended a fuel magazine.

In the stove in Complainants' Exhibit No. 1 and in Complainants' Exhibit No. 8 (Fort Orange stove) each have a base section, a draught-chamber section, within which is suspended a perforated fire pot composed of an upper zone or half made with a solid web of wall and a lower zone or half made grated or slotted, and also a combustion-chamber section. Complainants' stove has no fuel magazine, while defendant's stove (Fort Orange) is provided with one, which is suspended from the upper end of the combustion chamber.

In the Hunt stove the fire pot or basket is composed of a circular series of curved bars, which extend from the bottom up to the top. The specification describes the Hunt fire pot in language as follows:

"The fire pot P is made of cast-iron bars or strips arranged either in funnel or basket form (see figure 2), bound together by a rim of cast iron at top, all converging or terminating in a band or rim at bottom, the whole being cast together."

83 The fire pot in complainants' stove is materially different in the character of its construction, being composed of a solid zone of cast metal extending from the top edge of the fire pot downward to a distance nearly to one-half of the vertical depth of the pot, and of a lower zone or portion composed of a series of alternate bars and slots, the bars made in solid connection with the solid web of the upper zone of the pot. The specification referred to the fire pot in Rathbone-Hailes patent (Complainants' Exhibit 1) *says* in language as follows:

"Figure 5 is a side view of the same" (referring to the fire pot). * * *

"The fire pot is made of cast iron, of a flaring form, and of such diameter as to leave a free space, *d*, all around it when arranged within the stove. It extends from the enlarged fire chamber C down into the ash chamber B, and it is made with vertical openings through its sides for the admission of air into the body of the coal within it."

From this description, taken in connection with the drawings (showing the fire pot in figures 2 and 5), it will be readily understood that in its character as a device for holding coal to be burned and for compelling the air to pass into the body of the coal within it is a different device from that shown and described in the Hunt patent, which device is described as being made of cast-iron bars or strips bound together above by a rim of cast iron and terminating below in a rim or band at the bottom. In this form of construction

the bars thus held at their tops and bottoms are made to hold the fuel, while the slots between the bars, also extending from the bottom to the top, are calculated to admit air in only a limited measure into the body of the fuel within, while the greater measure of air will readily enter directly into the combustion chamber through the upper end portions of the slots.

84 The fire pot in defendant's stove Fort Orange is identically the same in its character, as a device for holding fuel, as the fire pot shown in the patent in suit. The specification of the patent, as far as relates to the fire pot in complainants' stove, would apply equally as well and clear as a full description of the fire pot in defendant's stove Fort Orange, while, on the contrary, the description given to the Hunt fire pot in the Hunt patent would not truthfully apply to the fire pot in defendant's stove and be as perfect a description of that fire pot as would be the description given in the patent in suit, Complainants' Exhibit 1.

In each of the stoves mentioned in the question their respective fire pots have each a flange rim made with it, by which each pot is suspended from an inwardly-projecting flange made with the wall of the stove. In this feature of construction the three stoves in question are the same and adapt their respective fire pots to be readily removed or replaced when circumstances require, the combustion-chamber section being first removed.

The fire pot or basket in the Hunt stove, as shown and described in the Hunt patent, is produced by the employment of two old elements, the same as was employed by Russell, as shown and described in the Russell patent,

The fire pot in the stove in complainants' patent in suit and in defendant's stove Fort Orange are each produced by the employment of three elements identically the same in those fire pots.

The two elements which compose the Hunt fire pot are the vertical grate bars and the vertical slots, the upper and lower bands or rings being considered as operating only to hold the grate bars in position that the slots may be kept uniformly the same in width. The vertical grate bars operate to hold the body of the fuel from its bottom to top from spreading out laterally, while the second

85 element (the vertical slots), extending also from bottom to top, operate as passage-ways through which air will pass from the draught chamber in a small measure into the body of the fuel and in a larger measure directly to the combustion chamber above, with, perhaps, little of its oxygen uniting from the carbon liberated from the fuel.

The elements which compose the fire pot in the stove in the patent in suit and also in the defendant's stove Fort Orange are: First, the solid or unperforated web or upper zone of the fire pot; second, the grating or bars of the lower zone or half, and, third, the slots in this lower zone between the bars.

The first-mentioned element in complainants' fire pot (the solid or unperforated upper web or zone of the fire pot) operates substantially as a shallow solid fire pot to closely envelope the sides of the upper half or portion of the body of fuel contained within the fire pot, and, co-

operating with the flanges from which the fire pot is suspended, this first element effectually prevents the passage of any air from the draught chamber directly to the combustion chamber. It also forces the air passing from the draught chamber to enter into the body of the coal within the fire pot, so that its oxygen will be made to unite with the liberated carbon from the fuel that it may be burned with rapid combustion.

The second element in complainants' fire pot (the grating or bars of the lower zone) operates to hold the particles of fuel in the lower half of the fire pot from spreading out laterally.

The third element in complainants' fire pot (the vertical slots or perforations) operates as side draught openings to the fire pot in its lower half for admitting air into the body of the fuel at points all around and below the plane of the solid web or zone.

The operations of these elements, which I have described
86 as being employed in and comprising the fire pot in the patent in suit, are the same in all respects in the fire pot in defendant's stove Fort Orange.

I would here state in explanation as to the different results had from the use of the Hunt fire pot and those from the fire pot in the stove in the patent in suit: To properly burn coal in stoves for heating purposes, so that high combustion of the fuel will be obtainable when desired, the air admitted and intended to contribute oxygen to the inflammable gases from the fuel should be made to pass through such a depth of fuel (especially when hard coal is used) as will cause the oxygen in the admitted air to thoroughly mix with the liberated carbon from the coal before its passage to the combustion chamber, so that it will unite with the same in proportion of two of oxygen to one of carbon, and produce mainly (as large as possible) carbonic acid. The fire pot shown and described in the patent in suit is, by reason of its form of construction shown and described in that patent, a mechanical device, well adapted and calculated to give to both the fuel and the air those conditions, and produce those operations, with both the liberated carbon and the air, for producing this high and rapid combustion of the fuel, which will make the stove more effective for heating purposes.

However, if the air (intended to contribute oxygen to the carbon as it is liberated from the fuel) is permitted to escape directly, in a large measure, into the combustion chamber above the fire pot without being forced to first pass through a sufficient depth of fuel, the great volume of air will not part with its oxygen before entering the combustion chamber, the combustion of the fuel will be slow, and the temperature of the gaseous products will be greatly reduced; and they will not be effective for heating the several plates forming
the outer walls of the stove to make them effective as radiators
87 for warming a room. The fire pot in the Hunt stove, by reason of its form of construction shown and described in the Hunt patent, is calculated to give to the fuel and the ingoing air those unfavorable conditions which I have just mentioned, and the fuel will be burned with low combustion, and the temperature of the

the bars thus held at their tops and bottoms are made to hold the fuel, while the slots between the bars, also extending from the bottom to the top, are calculated to admit air in only a limited measure into the body of the fuel within, while the greater measure of air will readily enter directly into the combustion chamber through the upper end portions of the slots.

84 The fire pot in defendant's stove Fort Orange is identically the same in its character, as a device for holding fuel, as the fire pot shown in the patent in suit. The specification of the patent, as far as relates to the fire pot in complainants' stove, would apply equally as well and clear as a full description of the fire pot in defendant's stove Fort Orange, while, on the contrary, the description given to the Hunt fire pot in the Hunt patent would not truthfully apply to the fire pot in defendant's stove and be as perfect a description of that fire pot as would be the description given in the patent in suit, Complainants' Exhibit 1.

In each of the stoves mentioned in the question their respective fire pots have each a flange rim made with it, by which each pot is suspended from an inwardly-projecting flange made with the wall of the stove. In this feature of construction the three stoves in question are the same and adapt their respective fire pots to be readily removed or replaced when circumstances require, the combustion-chamber section being first removed.

The fire pot or basket in the Hunt stove, as shown and described in the Hunt patent, is produced by the employment of two old elements, the same as was employed by Russell, as shown and described in the Russell patent,

The fire pot in the stove in complainants' patent in suit and in defendant's stove Fort Orange are each produced by the employment of three elements identically the same in those fire pots.

The two elements which compose the Hunt fire pot are the vertical grate bars and the vertical slots, the upper and lower bands or rings being considered as operating only to hold the grate bars in position that the slots may be kept uniformly the same in width. The vertical grate bars operate to hold the body of the fuel from its bottom to top from spreading out laterally, while the second

85 element (the vertical slots), extending also from bottom to top, operate as passage-ways through which air will pass from the draught chamber in a small measure into the body of the fuel and in a larger measure directly to the combustion chamber above, with, perhaps, little of its oxygen uniting from the carbon liberated from the fuel.

The elements which compose the fire pot in the stove in the patent in suit and also in the defendant's stove Fort Orange are: First, the solid or unperforated web or upper zone of the fire pot; second, the grating or bars of the lower zone or half, and, third, the slots in this lower zone between the bars.

The first-mentioned element in complainants' fire pot (the solid or unperforated upper web or zone of the fire pot) operates substantially as a shallow solid fire pot to closely envelope the sides of the upper half or portion of the body of fuel contained within the fire pot, and, co-

operating with the flanges from which the fire pot is suspended, this first element effectually prevents the passage of any air from the draught chamber directly to the combustion chamber. It also forces the air passing from the draught chamber to enter into the body of the coal within the fire pot, so that its oxygen will be made to unite with the liberated carbon from the fuel that it may be burned with rapid combustion.

The second element in complainants' fire pot (the grating or bars of the lower zone) operates to hold the particles of fuel in the lower half of the fire pot from spreading out laterally.

The third element in complainants' fire pot (the vertical slots or perforations) operates as side draught openings to the fire pot in its lower half for admitting air into the body of the fuel at points all around and below the plane of the solid web or zone.

The operations of these elements, which I have described
86 as being employed in and comprising the fire pot in the patent in suit, are the same in all respects in the fire pot in defendant's stove Fort Orange.

I would here state in explanation as to the different results had from the use of the Hunt fire pot and those from the fire pot in the stove in the patent in suit: To properly burn coal in stoves for heating purposes, so that high combustion of the fuel will be obtainable when desired, the air admitted and intended to contribute oxygen to the inflammable gases from the fuel should be made to pass through such a depth of fuel (especially when hard coal is used) as will cause the oxygen in the admitted air to thoroughly mix with the liberated carbon from the coal before its passage to the combustion chamber, so that it will unite with the same in proportion of two of oxygen to one of carbon, and produce mainly (as large as possible) carbonic acid. The fire pot shown and described in the patent in suit is, by reason of its form of construction shown and described in that patent, a mechanical device, well adapted and calculated to give to both the fuel and the air those conditions, and produce those operations, with both the liberated carbon and the air, for producing this high and rapid combustion of the fuel, which will make the stove more effective for heating purposes.

However, if the air (intended to contribute oxygen to the carbon as it is liberated from the fuel) is permitted to escape directly, in a large measure, into the combustion chamber above the fire pot without being forced to first pass through a sufficient depth of fuel, the great volume of air will not part with its oxygen before entering the combustion chamber, the combustion of the fuel will be slow, and the temperature of the gaseous products will be greatly reduced; and they will not be effective for heating the several plates forming

the outer walls of the stove to make them effective as radiators
87 for warming a room. The fire pot in the Hunt stove, by reason of its form of construction shown and described in the Hunt patent, is calculated to give to the fuel and the ingoing air those unfavorable conditions which I have just mentioned, and the fuel will be burned with low combustion, and the temperature of the

products of combustion will be low and of little value for heating the plates comprising the outer walls of the stove.

In order that the results of this comparison asked for in the question may be clearly understood, and the difference between the grated fire pot in the Hunt stove and the perforated fire pot in the stove in the patent in suit and in defendant's stove Fort Orange may be made more apparent, I would further state in explanation that the combustion of fuel (especially coal) depends upon the condition of the draught force exerted to draw a supply of air to the fuel in combustion, and upon the intake of air to meet this demand of draught force, and also upon the measure of air which is made to pass through the fuel being consumed.

The draught force exerted in a stove is had from the draught from the chimney through the exit or stovepipes connecting it with the stove, and the volume or measure of draught will be more or less modified by the capacity of the smoke-pipes and exit of the stove.

The intake of air is always governed by the area of opening or openings provided for the admission of air to the support of combustion, and the measure of air made to pass through the fuel depends upon the condition of the openings to the interior of the fire pot, and also the situation of the same in relation to the upper surface of the fire.

When a fire is kindled and the fuel is fully ignited in the fire pot and the chimney is warmed the warm air in the chimney will rise and be followed by the warm air in the smoke-pipe and the
88 heated gaseous products of combustion from the combustion chamber; this will cause a draught on the upper end of the fire pot, or the base of the combustion chamber, when the colder air outside of the stove will be drawn towards the combustion chamber to replace the heated gases and air passing from the same through the smoke-pipes and chimney. In its passage towards the combustion chamber the air can but pass in one or the other of two directions, or in divided measures in such two directions. In stoves as generally constructed these two directions may be either directly into the fire pot and through the interstices between the particles of fuel within the same (as through the fire pot of the stove in the patent in suit) until the oxygen has separated in whole or in part from the air, to pass onward and upward as constituent parts of carbonic acid or carbonic oxide, or both, mixed with nitrogen, to the exit, or more or less directly to the combustion chamber without entering into and passing through the body of fuel, as in the direction first described. This latter direction of passage of the air may be had through openings, seams, or spaces between the upper end of the fire pot and outer wall of the stove, or be had through the upper end portions of the slots of grated fire pots constructed as shown in Defendant's Exhibits Magee, Russell, and Hunt Patents.

Adjourned until to-morrow at 10 o'clock a. m.

89 ALBANY, N. Y., WEDNESDAY, *March* 15, 1882.

Pursuant to adjournment the examination was resumed at 10 o'clock a. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Counsel for complainants' offers in evidence a circular of the "Oriental stove with a revertible flue," which circular was, on the 24th day of January, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 11." Exhibit so marked.

Also a drawing marked "Plan view of circular fire pot without grated bottom, and requests the examiner to mark the same "Complainants' Exhibit No. 12." Exhibit so marked.

Also a drawing of complainants' fire pot, sectional elevation, which drawing was, on the 4th day of February, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 13." Exhibit so marked.

Also a drawing of defendant's fire pot, sectional elevation, which drawing was, on the 3d day of February, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 14." Exhibit so marked.

Also a drawing of the Hunt fire pot, sectional elevation, which drawing was, on the 3d day of February, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 15." Exhibit so marked.

90 Also a drawing of Wolfe fire pot, sectional elevation, figures 1 and 2, which drawing was, on the 4th day of February, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 16, Plate 1." Exhibit so marked.

Also a drawing of Wolfe fire pot, which drawing was, on the 4th day of February, 1882, marked for identification in this case, and requests the examiner to now mark the same "Complainants' Exhibit No. 17, Plate 2." Exhibit so marked.

Examination of Mr. SELKIRK continued.

By Mr YOUNGLOVE:

(Answer to question 38 continued.) When the direction of passage of air is had through openings, seams, or spaces between the upper end of the fire pot and the wall of the stove the air so passing will be diverted from passage through the body of the fuel in the fire pot and will readily pass into the combustion chamber and over the top surface of the fire. This will effect a reduction of both the combustion of the fuel and the temperature of the products passing therefrom; but when the passage of air is into the body of the fuel in the fire pot at a point several inches below the top of the fire pot (the fire pot being full or nearly full of coal) the air will be made to enter in between the particles of burning fuel and pass up through the same and part with its oxygen, which will unite with the carbon

liberated from the coal and produce a rapid combustion of the same and increase the temperature of the products, which will highly heat the plates against which they move in their passage towards the exit and thereby make the stove most effective for heating apartments.

91 I have produced a circular illustating a stove well known to the trade as the "Oriental," which is marked "Complainants' Exhibit 11." In the sectional elevation in this circular there is illustrated openings called in text of the circular (in paragraph 2, second page) the "regulating damper," which damper consists of a series of openings made between the upper end of the fire pot and the outer wall of the stove; the passage of the air to the combustion chamber above is illustrated by arrows, which I have marked 1 1. These openings illustrate a common means now employed by the trade for lessening the combustion of the fuel in the fire pot and the reduction of the temperature of the products of combustion. The openings shown in the sectional view of Complainants' Exhibit 11 operate the same as the openings, seams, or spaces I have just before mentioned, which I have stated would operate to divert the passage of air from through the fire pot when the draught force of the chimney is exerted.

I have prepared two drawings, one a sectional view of complainants' fire pot, sectional elevation, marked "Complainants' Exhibit 14," both of which illustrate by arrows the manner of passage of air through the body of fuel in fire pots of the kind or character as shown in the stove in patent in suit and defendant's stove Fort Orange, by which a more rapid combustion of the fuel and a higher temperature of the products of combustion is had and the stoves are made more effective for heating purposes.

I have also prepared a drawing of the Hunt's fire pot, sectional elevation, and marked "Complainants' Exhibit 15," in which is illustrated, by arrows, the passage of the air through the upper end portions of the slots of the Hunt grated fire pot. It will be readily seen that the air, in passing through the upper end of the slots, will not pass through any sufficient depth of fuel when

92 the fuel has settled in the fire pot an inch and a half below its top. These slots, extended upward, as shown in Defendant's Exhibit Hunt Patent and drawings, Complainants' Exhibit 15, would operate substantially the same as does the damper openings shown in the Oriental stove, Complainants' Exhibit 11, to reduce both the combustion of the fuel in the fire pot and the temperature of the products passing from the top of the same.

A natural law governs the movement of air in its use with burning fuel in stoves. The law is this: Air will move in currents through the least obstructed ways offered for its passage to the exit when the draught force of the chimney is exerted and an intake of air is provided to supply the demand of the draught force. In obedience to this natural law, when a fire pot is filled with burning fuel, and the draught force of the chimney is being exerted, and the intake of the air to the draught chamber is constant and no passage way to the exit is provided, except through the horizontal grate at

the lower end of a solid fire pot (as shown in Oriental stove, Complainants' Exhibit 11), the air (passing upward through the horizontal grate) will enter into the body of the fuel and pass between the particles of the same to part with its oxygen, which oxygen will unite with the carbon and cause a combustion of the fuel. With a solid fire pot and with the limited supply of air (as can only be had with a simple horizontal grate) a rapid combustion of the fuel would only be had in the lower portion of the fire pot, while the combustion of the fuel at the top will be less rapid as the temperature of the products would be low.

With a perforated fire pot (like the one shown in the patent in suit and in Complainants' Exhibit 13, and with the fire pot in defendant's stove and in drawing, Complainants' Exhibit 14) the influence of the draught force of the chimney with an ade-
93 quate intake of air to the draught chamber will cause the air to have passage into the body of the fuel through the openings in the horizontal grate and also through the slots in the sides of the grated zone of the fire pot in both cases, as indicated by arrows in Exhibits 13 and 14. This passage of the air through the slots of the grated zones of the respective fire pots will be in both cases at points below the plane of the lower end of the solid web or upper zone of the fire pots and through the body of the fuel enclosed about by this solid web or zone, and a far greater supply of air to the fuel will be had in the fire pots in complainants' and defendant's stoves than can be had when only passing through openings in a horizontal grate at the bottom of a solid fire pot (as employed in an Oriental stove, as illustrated in Complainants' Exhibit 11). The combustion of the fuel in complainants' and defendant's fire pots, by reason of the greater supply of air to the fuel within, will be more rapid and the products of combustion be of higher temperature from the use of those fire pots than will be had with solid fire pots like that in the Oriental.

With fire pots made grated in their sides from bottom to top, as shown in Defendant's Exhibit Hunt Patent and also in Defendant's Exhibits Magee and Russell's (English) Patents, a different operation of the air is had and different results produced, for when the draft force of the chimney is exerted and a sufficient intake of air to meet the demand of the draught force is supplied a portion of the air will enter the body of the fuel (if the fire pot be filled) and another portion of the air will pass directly into the combustion chamber through the upper ends of the slots between the gratings. With this partial passage of the air to the combustion chamber the combustion of the fuel in the fire pot will be less rapid than would be the fuel in a solid fire pot supplied with air through a horizontal grate only, and also far less rapid than would be the
94 combustion in a perforated fire pot in which the supply of air is through the openings of the grate below and the slots in the grated zone, as shown in the stove in the patent in suit and defendant's stove, while the reduction of the temperature of the products of combustion will also be greatly reduced.

After fuel has been burned for five to seven hours with ordinary

rapidity there will be an accumulation of ashes on the grate bottom of the fire pot, and to such an extent as to tend to retard or obstruct the passage of the air into the body of the fuel in the fire pot, though the draught force of chimney may be exerted the same as before such accumulation. This accumulation of ashes will operate to affect and greatly change the results from what would be, was the grate bottom clear of ashes, when solid fire pots (like that shown in the Oriental stove, Complainants' Exhibit 11) and the Hunt fire pot (in Defendant's Exhibit Hunt Patent and Complainants' Exhibit 15) are used, while the operations and results will not be materially changed when such accumulation of ashes is had in perforated fire pots like that shown in the stove in the patent in suit and defendant's stove Fort Orange and illustrated in Complainants' Exhibits 14 and 15.

When the accumulation of ashes—say two inches deep—is had in a solid fire pot only a small quantity of air will pass into the body of the fuel in the fire pot. This will cause a very low combustion and a low temperature of heat, so that the stove will be of little or no use for heating a room in cold weather. With a solid fire pot (when permitted to run from, say, ten at night until six o'clock in the morning without removal of the ashes) the stove having such a fire pot would be inefficient for maintaining a comfortable temperature of a room for that length of time in ordinary winter weather.

With the accumulation of ashes of two inches on the bot-
95 tom grate of a fire pot like that shown in the stove in Defendant's Exhibit Hunt Patent and in the drawings, Complainants' Exhibit 15 (as I have indicated by red lines in that drawing, Exhibit 15), obeying the natural laws governing the movement of currents under the influence of the draught force of the chimney and the pressure of air in the room to the draught chamber and thence to the exit, the air will not have passage upward through the ash zone above the grate, but will have passage through those portions of the slots between the grate bars which are highest in the sides of the pot, while but a small measure of the air thus passing through the slots will enter into the body of the fuel. The greater measure of air will pass through the upper ends of the slots almost directly into the combustion chamber and cause a greater reduction of the combustion and the products of the same than would be had with a solid fire pot, as I have just stated, for this reason: The air passing over the top surface of the fuel in a Hunt fire pot would operate to cool the top surface of the fire, which cooling would not be had with the solid fire pot with no air admitted over the same. A stove having a fire pot constructed either as the Hunt, Magee, or Russell fire pots, when run from evening until morning—say eight hours—would be but little, if any, better than no stove in ordinary winter weather, or a stove with no fire at the end of eight hours running without attendance, for the reason that but a small portion, if any, of the fuel would be in a state of combustion.

In stoves (having perforated fire pots like that shown in the stove in the patent in suit and in drawings, Complainants' Exhibit 13, and in defendant's stove Fort Orange and drawings, Complainants'

Exhibit 14) this accumulation of two inches of ashes on the grate bottom would not very materially change the operation or results from that had before such accumulation of ashes is had. The
96–101 reason for this is that after the accumulation has been such as to produce the ash zone to the depth indicated by red lines (in Exhibits 13 and 14) ample openings will yet remain in the sides of those fire pots below the solid web or zone of the same, through which the air would readily have passage into the body of the fuel within the fire pot, and air in its passage would part with its oxygen and the oxygen would unite with the carbon freed from the burning fuel and cause a rapid combustion of the same and a high temperature of products of combustion. This will result in highly heating the several outer plates of the stove, against which they would impinge when passing towards the exit. Stoves having perforated fire pots like that in the stove in the patent in suit may be run from evening until morning or for eight hours or more without attendance and be effective for comfortably warming apartments.

Recess until 7 o'clock p. m.

* * * * * * *

102 ALBANY, N. Y., FRIDAY, *March 17th*, 1882.

The examination was resumed at 9 o'clock a. m.

Present: T. G. Younglove, for complainants; Esek Cowen for defendant.

(Answer to Q. 38 concluded:) For the reasons I have given and the facts I have stated in my answer I find that the stove shown and described in Defendant's Exhibit Hunt Patent does not contain any fire pot having the form of construction shown and described in the stove in the patent in suit and shown to be employed in defendant's stove Fort Orange, and that the Hunt fire pot, by reason of this different form of construction, is made to operate differently with the air and the fuel, and also with the inflammable gases liberated from the fuel, to produce different results from those produced by the use of the perforated fire pot in complainants' stove.

I find that in the Hunt stove the grated fire pot is provided with a horizontal grate bottom supported at its lower end by a grate bar having its bearings in pendant lugs made with the lower end of the grated fire pot. In complainants' stove there is provided a horizontal grate, which forms the grate bottom of the perforated fire pot; this grate bottom is supported in a manner similar to that shown in the Hunt patent.

In defendant's stove Fort Orange the perforated fire pot is provided with a grate bottom, which is supported by a grate bar from the outer walls of the draught chamber.

In all three stoves the grates, considered as devices in the light of their purposes and not in their individual forms of construction, are substantially the same, and each serves as a means for holding the fuel from falling down from the fire pot and for admitting air

to the chamber of the fire pot when cleared of ashes and for
103 permitting the finer portions of the residuum of the fuel to fall below into the ash pit. The grate bottoms in both the Hunt and complainants' stoves are shown to be close up to the lower end of their respective fire pots; in the Fort Orange stove the grate is shown to be one inch, more or less, below the lower plane or bottom of the fire pot. This dropping down of the grate to a short distance below the lower end of the fire pot does not in the least change or modify the operations of the grate bottom from that had with the grate up to the bottom of the fire pot, as in Hunt's and complainants' stoves. The opening produced by such dropping down of the grate is an additional element given to the stove, by which another and an additional operation is had, namely, the clearing of the top surface of the grate of the ashes accumulated thereon.

The dropping down of the grate in defendant's stove does not in the least depend upon the grate having its support from the side walls of the stove. Lugs attached to the lower end of Hunt's and complainants' fire pot, when extended in their length downward, would, with the same bars, permit the grate to be dropped so as to produce this additional element—the opening—between the grate and the fire pot in complainants' stove. On the other hand, the holding of the grate at the bottom of the fire pot, so that no opening is produced, does not depend on the supporting bar being held by lugs made with the lower end of the fire pot, as by simply bowing the middle portion of the grate bar up the grate, though supported from the walls of the draught chamber, would be set up to the lower end of the fire pot.

I would here remark that the opening (the additional element) between the grate and the lower end of the fire pot in defendant's stove Fort Orange is known to the trade as the "anti-clinker" opening, and is claimed to be a patented improvement introduced in stoves since 1869.

104 In the Hunt stove there is provided one set of draught openings in the outer wall of the ash pit, while in the stove in the patent in suit there is provided two sets of openings, one of which set in each stove is in the wall of the ash pit below the plane of the grate and the other set in these two stoves are in the walls of the draught chamber and above the upper plane of the grate and opposite the vertical slots of the perforated fire pots in those stoves.

When it is considered that the value and the advantages of a stove for warming purposes is greatly increased when the combustion of the fuel can be so controlled and regulated as to produce rapid combustion and high temperature for warming apartments in very cold weather and a lower combustion and lower temperature of heat in mild weather and very slow combustion and a low rate of temperature when days are warm and evenings and mornings are chilly, these several desirable conditions, obtained by reason of the two sets of draught openings employed in complainants' stove in the patent in suit and defendant's stove Fort Orange, show the value and importance of two sets of draught openings.

In the stove in the patent in suit and in defendant's stove Fort

Orange both sets of draught openings may be fully closed to produce only a low combustion of the fuel throughout the warmer portions of the day, and either set may be partly or wholly opened for increasing the combustion and temperature of the plates of the stove in the chilly evenings and mornings; in colder weather a continuous and faster combustion and higher temperature may be had by use of one set of draught openings, while in very cold weather both sets of draught openings may be opened.

The lower set of draft openings is advantageously used in ordinary cold weather when it is desirable to run the stove about
105 uniformly the same; the air admitted through those openings will enter the body of the fuel within the fire pot through the openings in the grate bottom and also through the slots of the unperforated fire pot; but in colder weather, when, either temporarily or continuously, a more rapid combustion is desirable, the openings above the upper plane of the grate and opposite the slots in the perforated fire pot will be opened, when the air will pass directly into the body of the fuel in the fire pot through the slots of the grated lower zone of the same.

Q. 39. I place before you letters patent No. 46483, granted to James Morrison, Jr., February 21, 1865, and marked Defendant's Exhibit Morrison Patent. Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in the Morrison patent.

A. I have examined the patent in question and believe I understand the same.

Q. 40. Please examine and compare the stove shown and described in the Morrison patent with the stove shown and described in complainants' patent in suit, Exhibit 1, and in defendant's stove Fort Orange, Exhibit 8, and state how you find the Morrison stove compares with the two last-mentioned stoves, especially in the fire pot or fire cylinders, grates, and draft openings of the stoves mentioned.

A. I have examined and compared the Morrison stove, as shown and described in the Morrison patent, with the stove in the patent in suit and defendant's stove Fort Orange. I do not find in the first-mentioned stove any of the parts mentioned which correspond in form of construction and purposes with the parts shown in complainants' stove and stove Fort Orange, except it be that the grate marked F in the Morrison patent corresponds with the grates in the other two stoves mentioned. In each of the three stoves mentioned
106 in the question their grates are substantially for the same purpose, namely, for supporting the body of the fuel from falling down from their respective fire pots, for permitting the smaller particles of ashes to drop down from the same into the ash pit, and for admitting air to the body of the fuel below.

In the Morrison patent there is not shown or described a suspended fire pot in any form.

In the Morrison patent there is not shown or described a fire pot which is suspended from its upper end from the outer wall of the stove, so as to leave a chamber all around the fire pot, to serve as a draught chamber having communication with the combustion

chamber above, except through the fire pot, as in the stove in complainants' patent in suit and the stove Fort Orange.

In the Morrison stove the fire pot or cylinder is supported at its lower end from a plate at the top of the ash pit; an outer cylinder forming the outer wall of the stove is set off at a short distance all around from the outer side of the fire pot cylinder or pot, so as to produce a flue chamber all around, which communicates from the combustion chamber above the fire cylinder or pot to flues at the base of the stove leading to the exit. This feature of a flue concentric to the fire pot in the Morrison stove is not found in either of the two other stoves in the question.

In the Morrison stove the flue space around the fire pot serves as a means for reverting the currents of products of combustion as they pass off from the combustion chamber.

In complainants' and defendant's stoves their draught chambers serve no such purpose; they operate as chambers in which the air will be heated before having passage into the body of the fuel in their respective fire pots.

In the Morrison stove the fire pot or cylinder consists of a fire-brick-lined cylinder made with vertical sides and supported at its base; in the stove in the patent in suit and Fort Orange stove
107 their fire pots are circular and of unlined cast iron and are made with flaring form of upper end and are suspended from the outer walls of the stove.

Morrison's lined fire cylinder will gradually grow smaller in capacity by reason of the adherence of clinker; the fire pots in defendant's and complainants' stove will, by reason of being metal, always retain their original capacity, as no clinker will adhere to their sides.

The Morrison fire cylinder, by reason of its vertical side walls, will require a larger measure of fuel to produce an equal area of top surface of burning fuel of same depth than is required to be used with the flaring-sided fire pots in complainants' and defendant's stoves.

In the Morrison stove the fire cylinder is made with vertical sides and is mainly solid and brick lined, the exception being a narrow iron ring, between the second and third tier of fire brick, situated near the upper end of the fire pot. This ring is described in the specifications as being chambered and pierced on its inner side with "numerous small apertures," through which air admitted to said chamber from without will pass to the fire chamber.

The fire pots in the stove in the patent in suit and Fort Orange stove are each made of cast iron and of flaring form, with its upper half or zone consisting of a solid web, which will closely envelope the upper half or portion of the body of the fuel within. The lower portion or zone of these fire pots are made with alternate bars or fingers and slots; and while this lower portion of the fire pot will hold the coal from spreading out laterally, air will be permitted to readily pass through the slots, on a plane below the solid web above, into the body of the fuel. This grated and slotted lower portion of the fire pots in complainants' and defendant's stove is made in

solid connection with the solid zone or web above, and form with the solid web a unitary whole fire pot, which is suspended from its upper end from the outer walls of the stove.
108

Adjourned until 9 a. m.

ALBANY, N. Y., SATURDAY, *March* 18, 1882.

The hearing was resumed at 9 o'clock.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Examination of Mr. SELKIRK continued.

By Mr. YOUNGLOVE:

(Answer to question 40 concluded.) In the stove in the Morrison patent there is arranged at a short distance below the lower end of the solid fire cylinder a horizontal grate bottom, marked F in the patent, adapted to support the coal from falling out of the fire pot and permit the finer particles of ashes to pass down into the ash pit below and also admit the passage of air from the ash pit into the body of fuel within the fire pot. This grate is what is termed by the trade "a low-down grate," because of its situation below the lower end of the fire pot. This feature of the low-down grate, shown in the Morrison patent, has been considered as being first embodied in stove construction and is known as the "anti-clinker opening," that term being applied to openings between the grate and the fire pot through which clinkers or slag may be withdrawn from within the fire pot by means of a poker or slicer. This "low-down grate" in the Morrison patent is enclosed about by a granted frame, marked M in the patent, which frame is provided with a front horizontal extension having its upper surface on a plane with the top surface of the grate F. The side rim of this grated frame is also extended forward on each side. The grated sides of this grate frame operate in two directions; in one direction it operates as a guard to prevent the clinkers and slag (when being worked or drawn from the base of the fire pot to the front extension of the grate frame), to be passed thence into the ash pit below; in another direction it operates
109 by reason of the slots made in its vertical sides to admit an additional small measure of air to the bottom of the fire pot.

I find by measurement with a proportional divider that the vertical length of the slots in this grated rim of the grate frame is one-ninth ($\frac{1}{9}$) of the entire vertical length of the fire pot, measuring from the top surface of the grate to the base of the guards at the upper end of the fire pot, so that in a fire pot standing nine inches from its top edge to the horizontal grate these slots (in the vertical sides of the grate frame) would be one inch in vertical length, so as to be of no practical use for admitting air to within the body of the fuel when ashes have accumulated to the depth of an inch and a half or more.

The grate in the stove in the Morrison patent, being for the same purpose as the grate in the stove in the patent in suit and defend-

ant's stove Fort Orange, I consider it to be substantially the same as the grates in the last-mentioned stoves.

In the Morrison there is but one set of draught openings for admission of air to the fire pot, while in complainants' stove, in the patent in suit, there are two sets of such openings, as I have before described.

For the above reasons and the facts I have stated, I do not find in the Morrison stove the feature of a suspended perforated fire pot made of cast iron and with a flaring form as is shown in complainants' stove, in the patent in suit, and the defendant's stove Fort Orange.

Q. 41. Please examine the stove marked Defendant's Exhibit Wolfe Stove and compare the same with the stove shown in complainants' patent in suit, Exhibit 1, and defendant's stove Fort Orange, Complainants' Exhibit 8, and state how you find the Wolfe stove to compare with complainants' stove and defendant's stove Fort Orange.

110 A. I have examined and compared the Wolfe stove with the stove shown and described in the patent in suit and defendant's stove Fort Orange.

The stoves in the patent and the Fort Orange are both circular in form; each have a draught chamber and a combustion chamber, between which chambers is suspended, in the respective stoves, a fire pot, which is circular in form and made with flaring sides, with the upper zone of their respective pots made to consist of a solid web and the lower zone grated or slotted.

The Wolfe stove is square in form, and is composed of a draught-chamber and a combustion chamber, between which is suspended a solid fire pot, which is square in form and made with sides which are substantially vertical and solid from top to bottom.

The perforated and circular fire pot in complainants' stove, in the patent in suit, and in defendant's stove Fort Orange has made with its upper end a continuous flange all around, by which the pot in each stove is suspended from a continuous flange or ledge projecting inwardly all around from the inner wall of the stove.

The solid and square fire pot in the Wolfe stove has made with its upper margin edge an outwardly-projecting flange from its four sides all around, by which it is suspended from projecting lugs starting out horizontally from a continuous rib (about one-eighth of an inch in its horizontal extension) from two opposite side walls of the stove, and form a narrow ledge projecting from the two opposite transverse walls of the stove.

The fire pots in the stove in the patent in suit and defendant's stove Fort Orange are each provided with a flat horizontal grate adapted to be agitated horizontally and also dumped. The grates in these stoves are each an entirety and complete of itself.

The fire pot in the Wolfe stove is provided with a shallow square and dish-shaped grate bottom, consisting of three sections,

111 two of which are made solid with two opposite sides of the fire pot, and curved in from the lower side of an inwardly-projecting ledge toward the center of the fire pot on a curvature from

a radius of about an inch and a quarter, as shown in Complainants' Exhibit 16. The other section consists of a pivoted grate, having its opposite ends turned up on the same curvature of an inch and a quarter radius and connected by a tie piece; is provided with trunnion journals (a little out from the middle of its length), which have bearings in lugs made with the tie pieces of the grate sections, forming the opposite sides of the grate made solid with the fire pot. This grate is adapted to be dumped but not agitated, as are the grates of the other two stoves in question.

The fire pots in the stove in the patent in suit and defendant's stove Fort Orange, by reason of their flaring form, will produce a larger area of upper surface of fuel from the same measure of coal than can be produced from the vertical-sided fire pot in the Wolfe stove with the same depth of the fuel.

The Wolfe stove, by reason of the thinness of its side walls and the upwardly-projecting ledge at the bottom of these walls, and the vertical ribs extending from this inwardly-projecting ledge up to the top of the fire pot, leads me to conclude that the fire pot in the Wolfe stove was intended to be lined with fire brick or other equivalent material, as testified to by W. E. Hagan in answer to cross-question 360 (page 177, defendant's printed record). From the thickness of the side walls of the Wolfe solid fire pot (they being made only three-sixteenths of one inch in thickness), the fire pot in the stove (if made unlined) would be of no practical use for any length of time greater than a week or two of continuous use in cold winter weather. The intense heat of the fire within the fire pot would operate the same with the
112 flat solid side walls of the Wolfe fire pot as the heat does with the solid flat walls of square or oblong fire pots in cook stoves and ranges, to warp and twist the same and curve the middle portions of each side wall inward to such a degree as to produce between the top margin edge and flange and the outer wall of the stove large openings, through which air would freely pass in large measure from the draught chamber in which the fire-pot is suspended into the combustion chamber and over the upper surface of the burning fuel. This passage of the air over the top of the fire would be from the measure of air intended to enter into the body of the fuel to support its combustion, and the combustion of the fuel in the fire pot and the temperature of the products would be reduced to such a great extent that the stove would become practically useless for comfortably warming a room in ordinary cold weather.

To better illustrate the effects which the heat from the fire would have on the fire pot of the Wolfe stove I here produce a front plate of an oblong fire box taken from a cook-stove made by Bussey & McLeod, of Troy, N. Y., and known as the "Gold Medal."

Counsel for complainants offers in evidence the plate produced by the witness and requests the examiner to mark the same "Complainants' Exhibit No. 19." Exhibit so marked.

The Wolfe fire pot, as it is shown to be constructed in Exhibit Wolfe Stove, would, with constant use for a short time, say within two or three weeks, become so warped in its side walls that the

flanges at the upper end, by which the pot is suspended, would be drawn from the walls of the stove at the middle of each side to such an extent as to permit air to readily pass over the top surface of the fire in its passage from the draft chamber. The expansion of the metal in a horizontal direction, which is one-eighth of an inch
113 on each foot (when the iron is heated red hot), would either force apart the side plates of the stove, provided the side plates of the stove hug the outer edges of the flanges of the fire pot, or, if the plates were not forced outward, they would cause what is termed "a buckling" of the plate, when a large space would be produced between the flange of the fire pot at its middle of length and the outer wall of the stove. This space would admit the passage of a large measure of the cold air (intended to be passed through the fire pot) over the fire and reduce the combustion of the fuel and the temperature of the products passing from the same.

Recess until 1.30 p. m.

Afternoon Session.

The hearing was resumed at 1.30 p. m.

Direct examination of Mr. SELKIRK continued.

By Mr. YOUNGLOVE:

(Answer to question 41 concluded.)

In the fire pots of the stove of the patent in suit and defendant's stove Fort Orange the solid web or zone encloses about the upper half or portion of the body of the fuel when the fire pot is filled. This solid zone, together with the flanges from which the fire-pot is suspended in each stove, operates to effectually prevent the passage of air from the draught chamber to the combustion chamber except by passage through the body of the fuel, and by reason of the circular form the original shape of the fire pot will be preserved for many years without being so materially changed by warpage as to permit air to escape from the draught chamber to the combustion chamber except through the body of the fuel.

I have a stove that was manufactured by Swett, Quimby & Perry, of Troy, N. Y., called the "Graphic," which has been in use
114 for six seasons. The fire pot is substantially the same as those in the stove in the patent in suit and in defendant's stove Fort Orange, and is in apparently as good condition as when first used. The fuel used in the fire pot of the Graphic these last six years was hard coal, and from my experience and observations of the effects of burning hard coal (Lackawanna) in the square or oblong fire pots having straight flat sides I am of the opinion that a fire pot of the form of construction shown in the Wolfe stove if unlined would not retain its original form and have close connection with the side plates of the stove more than a week or ten days before large seams or spaces would be produced by reason of warpage of the sides of the pot between the sides of the pot and walls of the stove, when the stove would be of little value and efficiency for warming the room.

In the Wolfe stove the fire pot has no lower zone or portion which is grated or slotted, as the fire pot is solid from top to bottom.

In the stove in the patent in suit and defendant's stove Fort Orange the lower grated or slotted portion of the fire pot operates to admit a large supply of air into the body of the fuel at points all around and below the plane of the lower end of the solid zone of the pot after there has been an accumulation of two inches of ashes on the grate bottom in each stove.

In the Wolfe stove the shallow horizontal dished form of grate bottom serves as the only means for admission of air to the body of the fuel.

An examination of the Wolfe fire pot, as shown in the Complainants' Exhibit 16 and also Defendant's Exhibit Wolfe Stove, will show that the curved end portions of the bars of the dumping section of the grate and the curved gratings of the sections made solid with the fire pot proper are all contained within lines drawn with the lines of the sides of the fire pot, so that every portion or part
115 of the grate bottom in the Wolfe stove is practically and substantially beneath the fire pot and below its lower end.

The distance the curved portions of the grate bottom of the Wolfe fire pot are turned up is one and a quarter inches. This is of no practical service whatever for holding the fuel or for admitting air to the body of the fuel more than would be a flat horizontal grate used with a diameter equal to the extension of the lower end of the fire pot, with such flat grate dropped one and a quarter inches below the lower end of the fire pot.

In the Wolfe fire pot, with an accumulation of two inches of ashes on its dished form grate bottom (as I have illustrated by red lines in Exhibit 16) all the slots for the admission of air to the fuel would become practically closed by ashes and clinker the same as would the slots in a grate bottom of a solid fire pot in a stove like the Oriental, as illustrated in Exhibit 11 (circular Oriental).

With the Wolfe fire pot the curved sections of the curved grate bottom (which are made in solid connection with the fire pot) would operate to cause a banking of the ashes and clinkers substantially to conform to lines No. 6 in figure 1 of Complainants' Exhibit 16, and the ashes would remain so banked until removed by a poker or other means.

For the reasons above given I do not find in the Wolfe stove the features of a circular stove like that described in the complainants' patent and as shown in the Fort Orange stove; nor do I find a perforated fire pot, as also shown in those stoves.

Adjourned until Monday, March 20 inst., at 9 a. m.

116 ALBANY, N. Y., MONDAY, *March* 20, 1882.

The hearing was resumed at 9 o'clock a. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Direct examination of Mr. SELKIRK continued.

By Mr. YOUNGLOVE:

Q. 42. I place before you letters patent No. 21938, granted to J. H. Buchanan November 2, 1858, and marked "Defendant's Exhibit Buchanan Patent." Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in the Buchanan patent.

A. I have examined the patent named in the question and I believe I fully understand the same.

Q. 43. Please examine and compare the stove shown and described in said Buchanan patent with the stove shown and described in complainant's patent in suit and in defendant's stove Fort Orange, Complainants' Exhibit 8, and state how you find the Buchanan stove compares with the last two mentioned stoves, especially in the fire pots or fire cylinders, grates, and draft openings of the stoves mentioned.

A. I have examined and compared the stove shown in Defendant's Exhibit Buchanan Patent with the stove shown and described in complainant's patent in suit and defendant's stove Fort Orange. I do not find in the Buchanan stove any parts or devices which have the same character and features of construction as are shown in the other stoves mentioned in the question.

The Buchanan stove is one of singular form of construction for a stove, and partakes much of the character of a charcoal furnace and a hood of a smith's forge connected together in an adjustable
117 manner by means of a standard and clamping device, so that the latter may be raised or lowered in relation to the former.

The lower portion of this Buchanan stove is an ash pit, marked B in the patent. A device marked C, and termed a fire chamber, is supported from the bottom of the ash pit by legs *b* resting on supporting pieces *a*. The device termed fire chamber C is described as being made "partly spherical and of open grate work." In character as a device for holding fuel to be burned it is not unlike the fire dish shown in the Russell patent and the Hunt patent. The fire chamber is formed by a grated wall, which has its gratings made solid, with a lower and upper rim of metal, and has no grate bottom. Its bottom is provided with two perforations (one formed of small size and a central one of large size, operating probably as a dump hole) through which the residuum is to be deposited into the ash pit below. This grated walled fire dish is nested in the ash chamber, the same as one tea-cup will nest in another, and projects about one-half of its vertical length above the upper end of the ash chamber to a distance equal to at least one-half of the length of the slots in its side walls. In this form of construction and arrangement of the

side grated fire pot or chamber in the Buchanan stove there is no upper solid web or wall as in the fire pot in complainants' patent in suit and in stove Fort Orange; neither is there in the Buchanan stove a suspended fire pot of any kind, or any grated bottom or draught openings into the stove below a point of suspension of a fire pot, as in the last-mentioned stoves.

This Buchanan stove has no combustion chamber above the fire chamber, but a hood, not unlike the hood of a smith's forge, which is adjustable in height over the fire chamber.

This Buchanan stove would be practically an inoperative
118 stove for heating rooms by the use of coal as fuel unless it would be charcoal, which would burn in open air.

Q. 44. I place before you letters patent No. 24738, granted to S. Emilius Hewes July 12th, 1859, and marked "Defendant's Exhibit Hewes Patent." Please examine the same and state whether or not you fully understand the form of construction of the several parts of the stove illustrated and described in the Hewes patent.

A. I have examined the patent referred to in the question and believe I do fully understand the same.

Q. 45. Please examine and compare the stove shown and described in said Hewes patent with the stove shown and described in complainants' patent in suit and in defendant's stove Fort Orange, Complainants' Exhibit 8, and state how you find the Hewes stove compares with the last two mentioned stoves, especially in the fire pots or fire cylinders, grates, and draught openings of the stoves mentioned.

A. I have examined and compared the stoves illustrated and described in the Hewes patent with the stove shown and described in the patent in suit and with defendant's stove Fort Orange.

The differences between these three stoves are so obvious that I am of the opinion that a minute and specific description of the Hewes stove is wholly superfluous.

I will merely state that I find the Hewes stove to be made in a vase-like form and provided with a barrel-shaped fire pot, which is supported from trunnions arranged at opposite sides at points about the middle of its length, so as to be adapted to be oscillated, tipped, or inverted, when desired, to reverse the position of the differing sized ends made with the fire pot. The larger end of the barrel-form fire pot is provided with a coarse grate, while its smaller end is provided with a finer grate. No such form of construction and arrangement of parts are shown to be employed in the stove in the patent
in suit or in defendant's stove Fort Orange.

119 Q. 46. I place before you letters patent No. 45181, granted to Joseph Schmedinghoff November 22, 1864, and marked "Defendant's Exhibit Schmedinghoff Patent." Please examine the same and state whether or not you fully understand the form of construction and arrangement of the several parts of the stove illustrated and described in the Schmedinghoff patent.

A. I have examined said patent and I believe I understand the same.

Q. 47. Please examine and compare the stove shown and described in said Schmedinghoff patent with the stove shown and described in the patent in suit and in defendant's stove Fort Orange, Complainant's Exhibit 8, and state how you find the Schmedinghoff stove compares with the last two stoves, especially in the fire pot or fire cylinders, grates, and draught openings of the stoves mentioned.

A. I have examined and compared the summer stove shown and described in Defendant's Exhibit Schmedinghoff Patent with the stove in the patent in suit and defendant's stove Fort Orange (Complainants' Exhibits 1 and 8).

In the Schmedinghoff patent I find simply a charcoal furnace, which in the specification is termed "a summer stove." This "summer stove" is composed of an outer casing made in the form of a truncated cone, marked A, and a top plate, A^1, provided with a removable cover. Suspended within this outer shell or case and below its covered top plates is an inverted conical-shaped basket grate composed of a series of alternate bars and slots extending from a ring of metal below at the bottom of the grate to a ring above at the top, to which bottom and top rings the grate bars connect. Made with the upper end of the grated fire basket is a notched rim, from which the grate is suspended from the ring marked C. The drawing, indicated by arrows, and the specification describe that it is designed that portions of air will
120 pass upwards from the chamber between the basket grate and outer shell of the furnace through the notches marked *d* and thence over the fire, while other portions of the air will enter into the fire basket through the vertical slots between the grate bars. At the contracted lower end of this basket grate there is shown in the drawings a small grated aperture, through which may be passed the residuum from the charcoal, the fuel intended to be used, as stated in the patent. Draught openings are provided in the lower end of the outer case or shell of the furnace through which air will be admitted to the basket grate.

This summer stove in the Schmedinghoff patent differs in all its parts from the form of construction and arrangement of the parts in other stoves, and especially in the devices shown and described in the patent in this suit, for receiving and holding the fuel to be burned, and for operating with the air intended to contribute to the combustion of the same.

The basket grate in the Schmedinghoff stove is unlike the suspended partly solid and partly slotted fire pot in the stove in the patent in suit, and is substantially the same in form of construction as the fire dish in the stove in the Russell patent and in the Hunt patent; and as in those stoves the grated basket in the Schmedinghoff stove will permit a large portion of the air to freely pass from the chamber surrounding the grate basket through the upper portions of the slots into the chamber above the grated basket; and this free passage of air through the upper ends of the slots will, like in the stove in the Russell patent and the Hunt patent, operate to reduce the combustion of the fuel and lower the temperature of the products of combustion from the fuel to such an extent that a very much larger per cent.

of the carbon distilled from the fuel will escape unburned
121 than from the perforated fire pot in the stove in the patent in suit, while the low temperature of the products of combustion in the summer stove will be so reduced that but little effective heating of the plates will be obtained as compared with that obtained from the high temperature of the products of combustion in the stove in the patent in suit and in defendant's stove Fort Orange.

Recess until 1.30 p. m.

Afternoon Session.

The hearing was resumed at 1.30 p. m.

Q. 48. Please examine the casting provided with a grate bottom, to which is attached a tag, on which is printed and written the following words:

"From the Littlefield Stove Co., cor. N. Pearl and Pleasant streets, Albany, N. Y."
"Hailes, Gray & Selkirk, Albany, N. Y."

State, if you know, what said casting is.

A. It is a solid fire pot, made for a small-sized stove called the "Morning Glory," formerly manufactured by Dennis G. Littlefield, of Albany, and his successors and associates in business.

Counsel for complainants offers the fire pot in evidence and requests the examiner to mark the same "Complainants' Exhibit No. 20."

Q. 49. In your answer to cross-interrogatory 7, in your testimony before given, "Does defendants' stove, Exhibit No. 8, belong to the class of stoves known as cannon stoves?" you said, "I cannot say it does or does not." State what you understand a "cannon stove" to be, as that term was applied to a class of stoves in 1865, in contradistinction to stoves of other classes.

122 A. The word "cannon" stove was originally applied to a class of stoves largely used in the West, and as made prior to 1865 and since was a popular stove in the West, where it was generally used for burning bituminous coal as fuel, while this same class of stove was sometimes called "globe" stove in the East and was an improvement on the cylinder stove.

The true cylinder stove, as a rule, is a stove having a fire cylinder made of cast iron with sides straight, or nearly straight, and in some cases vertical and in other cases slightly tapering upward and in some other cases tapering downward.

A modified form of cylinder stove is made of sheet iron, cylindrical in form, and having its lower portion holding the fuel lined with fire brick. Both these classes of cylinder stoves have been popular with the trade and the public because of their economy of construction and their efficiency for heating rooms. One peculiar feature of these stoves was that the heat radiated from their outer walls in radial lines all around and in nearly horizontal lines of direction.

The "cannon" stove was and is a stove of more elaborate parts than those employed in the cylinder stove, and was probably more expensive. Prior to 1865 "cannon" stoves, as a rule, were composed of a base section, an ash-pit section, and a fire-chamber section made with outwardly-swelling walls, which fire-section chamber was made in two parts and of cast iron, with the wall of the lower part or section forming the wall of the fuel chamber or fire pot, against which wall the fuel was burned. The upper part or section, also made of cast iron, formed the combustion chamber above the fuel. These two parts or sections, thus composing the fire-chamber section, were each cast solid, so that each part or section consisted of a single piece of metal which approached a semi-spherical form. The lower section, forming the fire chamber or pot, was mounted on the
123 upper wall or plate of the ash-pit chamber, with its more extended end diameter above and contracted end below. The upper section was mounted with its enlarged end on the rim of the enlarged upper end of the fire pot, while its more contracted portion formed the upper portion of the combustion chamber.

To better illustrate the cannon stove in its general features as was made prior to 1865, I produce a catalogue of Treadwell and Perry, stove manufacturers, 1861, on page 25 of which is illustrated a woodcut illustration of a stove called "The Western Cannon."

I also produce a catalogue of stove patterns issued by Harris and Zoiner, of Cincinnati, Ohio, 1864, on the 41st page of which is illustrated a "cannon" stove called "The Vulcan," and on page 39 of said catalogue is illustrated a cylinder stove of the trade name "Meteor."

Counsel for complainants offers in evidence the catalogues produced by the witness, and states that he will produce photographic prints of the stove illustrated on the pages of each catalogue referred to by the witness, the same to be marked by the examiner Complainants' Exhibits Nos. 21, 22, and 23, the said pages having been marked by the examiner for identification.

Q. 50. State whether or not, in your opinion, the Rathbone and Hailes stove shown and described in the patent in suit is a "cannon" stove, and give your reasons for the answer you may make.

A. The Rathbone and Hailes stove, as shown and described in the patent in suit, does not properly belong to the class of stoves known as "cannon" stoves, as that name was applied to a certain class of stoves in 1865 and prior to that date, though probably it might have been called an improved "cannon" stove.

124 My reason for saying that the stove in the patent in suit cannot be properly called a "cannon" stove is this: When the improvement shown and described in the patent in suit was embodied in a "cannon" stove the improved stove thus produced and embodying the invention of Rathbone and Hailes was at once lifted out from the class known as "cannon" stoves, and naturally assumed a place at the head of a new class of stoves which materially differed from the "cannon" stove in its essential features of construction.

Thus the Rathbone & Hailes stove, as shown and described in the patent in suit (in view of the prior state of the art as shown in the record of this cause), became the head of a new class of stoves, the distinguishing feature of construction of which was that of an encased and detachable perforated fire pot suspended from the outer walls of a stove having a bulbous or swelling outer wall above the fire pot.

Q. 51. Examine the stove shown and described in the patent in suit and the cannon stoves illustrated in Exhibits 21 and 22 and state what the inventors (Rathbone & Hailes) did to improve the class of stoves known as "cannon" stoves so as to place it in another class, as you have stated.

A. In the "cannon" stove, as I have before stated, there was not used a detachable fire pot, as the wall of the lower section of the stove above the ash pit operated to hold the fuel while being burned. At the same time the base of the upper section of the stove wall was about the same diameter as the upper end of the lower section, so that the chamber room of the upper section (which acts as a combustion chamber and a flue for leading the products of combustion from the fuel chamber below) was no larger than the top of the wall section which served as a fire pot.

Rathbone & Hailes (the inventors), in making their im-
125 provements on "cannon" stoves, introduced within the fire chamber (against the walls of which the fuel was burned) the fire pot, which fire pot was so arranged within the stove as to be in fact suspended from the wall of the lower section, against which the fuel formerly was burned in "cannon" stoves.

By this arrangement of the suspended fire pot from the outer wall of the stove there was produced around the fire pot, and between it and the outer wall of the stove, a draught chamber in which the admitted air would prevent the parts of the fire pot being overheated, while at the same time the air thus admitted would itself be heated before passing up through the body of the fuel in the fire pot. Another important change was also produced. This change consisted in the relative enlargement of the combustion chamber or flue at the upper end of the fire pot when compared with the area of the top opening of the fire pot.

Q. 52. Is it your opinion that the stove Fort Orange embodies the same features of construction in its operating parts as was embodied by the inventors of the stove in the patent in suit, and being an improvement on "cannon" stoves?

A. The Fort Orange stove, in my opinion, embodies substantially all the improvements made by Rathbone and Hailes on the "cannon" stove which I have above described, for I find in the Fort Orange stove an outer wall swelling or enlarged outwardly at the middle of its height or at the base of the combustion chamber; also a fire pot (having substantially the form of construction shown and described in the patent in suit) suspended from the wall of the stove so as to be within a draught chamber formed between the suspended fire pot and the wall of the stove.

The Fort Orange stove also has its combustion chamber, above

the fire pot, relatively larger than the upper open area of the same, and in both cases, by the same parts and their arrangement,
126 the same operations are had and the same results are produced, and they both belong to types of stoves which may be properly classified as encased, suspended fire-pot stoves.

Q. 53. State what, if anything, you find in the stove, in the patent in suit, which was new Nov. 21, 1865, in view of the state of the art as shown in the stoves of Defendant's Exhibits Russell Patent, Hunt Patent, Harrison Patent, Morrison Patent, Magee Patent, Treadwell Patent, Easterly Patent, Buchanan Patent, Hewes Patent, Schmeckingbott Patent, and Wolfe Stove.

A. I find in complainants' stove, in the patent in suit, a fire pot of circular form and having flaring sides, which is described as being made of cast iron with its upper half or portion made solid and its lower half or portion grated or slotted; this form of construction I do not find in any of the stoves in defendant's several exhibits mentioned in the question. This fire pot, termed in the patent a "perforated fire pot," is a new device, in view of the state of the art as shown by defendant's exhibits in this case.

I find in the stove, in the patent in suit, employed old devices or elements which were used in connection with this new device, the perforated fire pot.

These old elements are a circular stove, a grate bottom at the lower end of the fire pot, and draught openings for the admission of air to the fire pot.

I also find a second set of draught openings situated above the plane of the grate and opposite the slots made in the grated zone or half of this new form of fire pot. This second set of draught openings I do not find in any of the stoves in defendant's exhibits mentioned.

Q. 54. State what device, if any, in the stove Fort Orange you find which corresponds with the device or with the fire pot which you say was new Nov. 21, 1865, and is found in the stove in the patent in suit.

127 A. I find in the stove Fort Orange a fire pot identically the same in form of construction as the fire pot in the complainants' stove in the patent in suit, excepting that it has no tie ring made with the lower ends of the vertical grate bars of the perforated fire pot in that stove. This fire pot in the Fort Orange stove is arranged in the same manner within the stove, and is provided with a similar grate bottom and with two sets of draught openings—one set being below the plane of the grate for admitting a limited supply of air to support combustion, and the other set above the plane of the grate and opposite the slots in the lower half or grated zone of the fire pot, by which an additional supply of air will be admitted to the fuel in combustion within the fire pot.

Adjourned until 10 a. m.

128 ALBANY, N. Y., TUESDAY, *March* 21, 1882.

The examination was continued at 10 o'clock a. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Direct examination of Mr. SELKIRK continued.

By Mr. YOUNGLOVE:

Q. 55. State whether or not in testifying as to the operations of stoves having solid fire pots, as in the stove shown in Complainants' Exhibit 11 (circular Oriental), and fire pot Exhibit 20 and stoves having grated fire pots or baskets, substantially as shown in stoves represented in Defendant's Exhibits Magee, Russell, and Hunt Patents, and perforated fire pot, as shown and described in the patent in suit, and defendant's stove Fort Orange, you testified from knowledge derived from observation or experiment?

A. I testified from knowledge derived from both observation and experiment. Since 1866 I have used several heating stoves having solid fire pots, and found them in all cases to operate substantially as I have stated. Since 1873 I have used and operated four different stoves, made by as many different manufacturers, and containing perforated fire pots, constructed and arranged as shown and described in the patent in suit, and in defendant's stove Fort Orange, and in every case I have found these stoves operate substantially as I have heretofore stated. I have seen a large number of the same type or class of stoves employing perforated fire pots and manufactured by many different manufacturers, and I have observed that their operations were in all cases substantially the same as those which I have observed in the Monitor stove, made under complainants' patent in suit, and Fort Orange stove.

129 My knowledge of the operations of a grated fire pot or basket is derived solely from experiments and observations made since the commencement of this cause. Not being able to find a stove containing a grated fire basket (like those shown in the Russell and Hunt's patents), I altered and changed a perforated fire pot, originally made to fit a stove in my office, into a grated fire pot or fire basket, in which the bars and slots extend from the bottom to the flange rim at the top, substantially as in the Russell, Magee, and Hunt patents, with the exception of a narrow ring of metal which encircled the fire pot or basket at or about the middle of its length, which fire basket I now produce.

Counsel for complainants offers the fire pot produced by witness in evidence and requests the examiner to mark the same "Complainants' Exhibit No. 24." Exhibit received and marked.

In my experiments the grated fire pot or basket, Exhibit 24, operated substantially as I have stated the fire pots or baskets in the Russell, Magee, and Hunt's stoves would operate.

Q. 56. State if you are familiar with the several representative types or classes of heating stoves, burning coal for fuel, which have

been most popular with the trade since 1865; and, if yea, to what extent.

A. I am familiar with the several representative classes or types of heating stoves, using hard coal as a fuel, which have been most popular with the trade and the public since 1865, and have had considerable acquaintance with the classes of stoves most popular as coal-burning heating stoves. These stoves, with which I am familiar, may be divided in classes as follows: Cylinder stoves (both
130 lined and unlined), "cannon" or globe stoves, encased solid fire-pot stoves (with and without fuel magazines and revertible flues), and perforated fire-pot stoves, also with and without fuel magazines and revertible flues. Cylinder stoves were and have been always popular because of their cheapness and comparatively smaller cost to the user, although for the last few years a cheaper class of stoves embodying in their construction the perforated fire pot (in complainants' stove in the patent in suit and defendant's stove Fort Orange) have to a large extent superseded the cylinder stove, especially the cast-iron ones, and to some extent sheet-iron brick-lined ones. Cannon stoves have been and are still popular in sections of the country where soft coal is generally used as a fuel. In 1863–'4 and '5 encased solid fire-pot stoves began to be introduced to a considerable extent, and their manufacture increased yearly up to about 1872 or 1873, while the perforated fire-pot stove (substantially as shown in the patent in suit), though first introduced in 1864 and 1865, was limited in manufacture to but four stove manufacturers; but in 1873 the perforated fire-pot stove (the class to which the stove in the patent in suit and stove Fort Orange belongs) began to be largely manufactured and sold by others, and became so popular both with the trade and the public in 1876 and 1877 as to almost wholly drive from the market the encased solid fire-pot stoves; and at this present time the great majority of stoves manufactured as first and second class stoves contain the perforated fire pot substantially as shown and described in the patent in suit and in the Fort Orange stove.

Q. 57. State what, in your opinion, are the causes which have operated to drive the encased solid fire-pot stove from market and has made the class of stoves using the perforated fire pot shown in the patent in suit and in the stove Fort Orange as popular with the trade and the public as you have stated that class of stoves have become.

131 A. There are several causes growing out from the patented improvements shown and described in the patent in suit which have operated to make the class of stoves which complainants' and Fort Orange stove represents popular with the trade and the public.

In the encased solid fire-pot stove illumination from mica windows in the wall of the combustion chamber above the fire could only be had, while when the perforated fire pot as shown and described in complainants' patent was employed the stove was adapted to receive additional illuminating windows placed out in the walls of the draught chamber opposite to the slots in the lower zone or half of

the perforated fire pot. This adaptation of the stove wall to receive mica windows does not in anywise necessitate a reconstruction of the operative parts of the stove. Another cause was that stoves containing the perforated fire pot suspended within a draught chamber was better adapted to receive a subsequent improvement, namely, the opening between the lower end of the fire pot and the grate, and known as the "anti-clinker opening," than were stoves containing solid fire pots, as were first used by James Spear, of Philadelphia, between 1869 and 1872, for the reason that with the solid fire pot the observer could not view the extent of the accumulation of ashes on the ash zone on the grate, while with the perforated fire pot as shown and described in the patent in suit and in defendant's stove Fort Orange the extent of the accumulation of ashes could be readily observed. Another cause is that because of the much higher temperature of the products of combustion which could be obtained from the use of a perforated fire pot over a solid one stoves were better adapted to receive in their construction revertible flues, through which the draught would be sharper, than could be had
132 with revertible flues leading the products of combustion at a lower temperature from the upper surface of the fuel of a solid fire pot.

And another cause is that stoves embodying in their construction the suspended perforated fire pot, as shown and described in the patent in suit and stove Fort Orange, would (with one or two sizes smaller than the encased solid fire-pot stoves before used) be more efficient for warming rooms in extreme cold weather, and at the same time, by proper regulation of the draft and check dampers, be so controlled as to be fitted for comfortable use in more moderate weather or in fall and spring, when but little fire is required to overcome the chilly air of mornings and evenings. This greater efficiency of smaller stoves having perforated fire pots over the larger stoves having solid fire pots enables the first-mentioned stoves to be manufactured and sold to the public at considerably less cost than could the last-mentioned stoves, while at the same time the public had the advantage of better means for regulating the combustion to adapt the stove for uses in all weather. These, I believe, are the principal causes which can be assigned for the great popularity which stoves embodying the improvements shown, described, and claimed in the patent in suit has obtained with the public and the trade.

Q. 58. Please examine complainants' patent in suit and state what you understand to be the subject-matter of the first claim, which reads as follows:

"Arranging a perforated fire pot with a grate bottom within a circular stove having provisions for the admission of air below the point of suspension of said fire pot, substantially as described."

A. In view of the state of the art prior to Nov. 21, 1865, and from what is shown in the drawings described in the specification,
133 I understand that the device called in the claim quoted "a perforated fire pot," to be a new device—that is to say, a fire pot having such a form of construction as to make it new, in view

of the state of the art prior to the date of the patent; and with this new fire pot there is used in construction therewith a grate bottom and a circular stove, in which the perforated fire pot is suspended, and draught openings located in the walls of the stove below the point of suspension of the fire pot. These four elements, the perforated fire pot, the grate bottom, the circular stove in which the perforated fire pot is suspended, and the draught openings, co-operate together to produce the different and better manner of combustion of the fuel and the higher temperature of the escaping products of combustion for operation with the several plates forming the walls of the stove, so that the stove is made to be much more efficient for warming apartments than one of larger construction, and will be of better service than one of one or two sizes larger of the older form of construction.

This different and better manner of construction of the fuel is stated in the patent by the inventors to be the object of their improvement, for they say in language as follows:

"Our object is to maintain such an intense heat in the fire pot by the free supply of oxygen to the incandescent coal therein all around the fire pot that there will be little or no smoke formed after the fire is fully started."

As carbonic oxide when cooled is smoke, and as the inventors have successfully provided means by which but little carbonic oxide would be produced from the fuel while being burned, they have fully accomplished one of their objects as declared in the patent.

The inventors further state in this connection:

134 * * * "In this way we obtain a more perfect combustion and are enabled to burn soft coal and obtain the greatest heating effects therefrom."

Thus the inventors show in the patent that their improved stove is adapted to be used for burning soft coal, while, at the same time, the large use of hard coal by the public in stoves containing the improvements set forth in the first claim fully demonstrate that they are adapted to be used for burning that kind of fuel.

Q. 59. The second claim of complainants' patent in suit reads as follows:

"The combination of an annular horizontal register with a suspended fire pot which has perforated sides, substantially as described."

State what devices, in your opinion, form the subject-matter or combination set forth in that claim.

A. As I have before stated, the fire pot with perforated sides was new, in view of the state of the art prior to the date of the patent in suit; and in this second claim it is employed in combination with any device which would be equivalent and substantially the same as an annular horizontal register which is shown and described in the patent to be composed of draught openings made with the walls of the draught chamber opposite the slots in the perforated fire pot and adapted to be opened and closed by covering or closing plates; and inferentially (as the fire pot is described in the claim to be a suspended one) this claim also includes the walls of the draught

chamber from which the fire pot may be suspended. These three elements, the perforated fire pot, the walls of the draught chamber from which the fire pot is suspended and is shown to be provided with a draught opening below the plane of the grate, and the annular register above the plane of the grate, and with the walls
135 of the draught chamber, co-operate together to produce (when the openings in the annular register are uncovered) a more direct introduction of the air into the body of the fuel with the fire pot through the slots made in the lower portion of the new fire pot and above the ash zone.

I do not suppose that to carry out the spirit of the invention, as set forth in the second claim, that the practice of the invention would limit the use of the register to one in the form of an annular horizontal ring, when an annular vertical ring plate provided with openings could be used for having the same operations and obtaining the same results; or sectional plates, in the aggregation forming substantially an equivalent device for opening and closing draught openings located opposite to the slots of the fire pot, when they would operate substantially in the same manner and with the same results, for the second claim contains the qualifications "substantially as described," which I understand allows the use of equivalent devices which were old and well known at the time of the patent.

Q. 60. I hand you "Defendant's Exhibit File Wrapper, Rathbone & Hailes Application." Please examine the subject-matter of the erased third claim, as set forth in that exhibit, which reads as follows:

"A perforated fire pot which is constructed with a flange around its upper edge and a grate in its lower end, substantially in the manner described,"

And state what elements, in your opinion, were intended to be included in that claim as being an operative invention.

A. From an examination of the patent and also the file wrapper, and from the drawings, together with the qualifying term or phrase occurring in the said erased third claim as follows: "And a
136 grate in its lower end" (referring to the lower end of the fire pot) it is clear, I believe, that this claim related to a means by which the grate would be held in connection with the fire pot by being supported from its lower end, so that when the fire pot (suspended by its upper flange rim from the wall of the stove) was lifted out from the draught chamber the grate would also be removed with it from the stove.

My reasons for this opinion are two: One because of the specific form of construction described in the claim in the phrase "and a grate in its lower end," which specific form of construction would not cause the fire pot or the grate to operate in any different manner from that which would be had was the grate detached from the fire pot; and the other reason is that there is an omission of mention of any draught openings being employed in connection with this fire pot and grate. Hence I am of the opinion that this erased third claim related to means advantageous in the mechanical construction

and arrangement of the fire pot and grate, and not to means by which a better and different mode of burning fuel would be obtained, as is obtained by the employment of the combination and arrangement of devices set forth in the 1st and 2d claims of the patent in suit.

Q. 61. In answer to question 35 of examination of Tuesday you testified in relation to certain experiments made with a grated fire pot or basket. Please state what the experiments were—the operations and results.

A. My experiments were made with a stove in my office manufactured by Ely and Ramsey, of New York, called the Phœnix. I procured a fire pot, the duplicate of the one in my office to that shown in Exhibit 8. After removing four small bolts from the middle ring of the stove (where the combustion-chamber section unites with the draught-chamber section) I lifted the former from the latter and substituted the grated fire pot, Exhibit 24, for the perforated one.

137 In my first experiment I put in about twice the quantity of wood kindlings I generally used for starting a fire, and at 7 o'clock and 45 minutes I touched a match to the kindlings, with all the draught openings opened to the fullest extent. After the kindlings were ignited I introduced coal of chestnut size into the fire basket by pouring it down through the fuel reservoir. At 8 o'clock and 20 minutes a light bluish flame (which would not ignite paper) began to appear over and escape from below to the top surface of the fuel into the combustion chamber, and gradually increased in volume. As the fuel in the pot settled down, by reason of the kindlings burning away, I gradually replenished the fuel, so as to keep it up even to the top plane of the fire pot. In this manner the fire was burned. About 8 o'clock and 45 minutes the upper surface of the fuel began to redden in the centre of the fire basket, and at 9 o'clock the top layer of fuel was of a dull, low, red color, with a bluish flame, which would not ignite paper. At 9 o'clock I dampened the stove in the manner generally practiced by me.

At 8 o'clock next morning I found the coal had settled about one and a half inches below the top of the rim of the basket; no fire visible in the upper end of the pot, but fire was visible through the slots and centre of the basket. I opened the draft doors and the direct draft and waited for 30 minutes for the fire to burn up, but could not at the end of that time perceive any material advance. I then took a strip of heavy paper and with it closed the upper openings, and stuffed other paper between these strips and the wall of the stove to hold the strips in place. After this was done the fuel began at once to ignite, when I replenished the basket to its top, and within ten minutes the fire was rekindled from top to bottom, and

138 the heat of the fire ignited the paper I had used for closing the upper portions of the openings, and it burned away. I run the stove all that day, and by replenishing it several times kept the basket about full. The combustion was very slow; the top surface of the fuel was of a dull, low red, and no flame of any kind could be seen in the daylight. The second evening I

dampened the fire (the same as the night before), and the next morning I found the fire had died out, with nearly half of the contents of the basket of unburnt coal and the other half soft ashes, but no clinker or slag.

The second experiment was conducted in the same manner, but the fuel as it was being consumed was fed continually from the fuel magazine, with the fuel in the basket kept fully over one inch above the top end of the fire pot, when the combustion was in a small degree better.

Adjourned until to-morrow, to meet at the office of W. E. Hagan, No. 259 River street, Troy, N. Y., at 10 o'clock a. m.

139 TROY, N. Y., WEDNESDAY, *March* 22, 1882.

The examination of witnesses on behalf of complainants was resumed, pursuant to adjournment, at the office of W. E. Hagan, Esq., No. 259 River street, Troy, N. Y.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

WILLIAM J. KEEP, being duly sworn, in answer to interrogatories propounded by Mr. ALEXANDER SELKIRK, on behalf of complainants, deposes and says:

Q. 1. Please state your name, age, residence, and occupation.

A. William J. Keep; age, 39; residence, Troy, N. Y.; occupation, manufacturer of cooking ranges.

Q. 2. How long have you been connected with the stove business?

A. Twelve years.

Q. 3. Within the last twelve years what stoves have you been interested with?

A. Up to middle of 1868 I was superintendent of a stove factory at Buffalo; from 1868 to 1875 I superintended the manufacture and improvement of Stuart stoves, which were made by Fuller, Warren & Co., of Troy; also during that time I made some parlor stoves, which were also manufactured by them; since that time I have been making cooking ranges on my own account.

Q. 4. By what trade name were the stoves manufactured by Fuller, Warren & Co. known to the trade?

A. Known as Keep side-burning stoves or as "Keep's side-burners."

Q. 5. How many sizes of those stoves were there made?

A. Three sizes and one fireplace heater.

Q. 6. Please describe the fire pot that was used in those Keep side-burners.

140 A. At the bottom there was a pot for holding slate, above this a slotted portion or side grate, and above this grate a solid pot or ring. The coal rested at the bottom, in some of the stoves, on a solid grate, and in some on an open grate. The bottom grate was stationary and the side grate capable of a vibrating motion.

Q. 7. Was the solid upper part of the fire pot made in a continuous piece or in sections?

A. Made in sections.

Q. 8. Please state what was the vertical depth of the upper solid section in each of the several sizes.

Counsel for defendant objects to the question that unless the depth of the fire pot is given the depth of a portion will give no definite information to the court as to the depth of the fire pot.

A. In the smallest size (No. 10) the average depth of the pot was six and a half inches. The solid portion was two and a quarter inches. The next size (No. 12), depth of the pot, seven and a half; depth of the solid portion, three. The No. 14 had a pot eight and a half inches deep; solid portion, three and a half inches deep. The fireplace heater had a fire pot six and a half inches deep; solid portion, three and a half inches deep.

Q. 9. In stating the depth of the pots in the sizes of stoves mentioned did you include the vertical depth of the solid upper portion with the depth of the lower grated portion?

A. I did.

Q. 10. State whether or not, in those side-burners, the fuel was supplied from a fuel magazine or by hand from a hod or shovel.

A. It was supplied by a magazine.

Q. 11. State wherein the fire pots having the two-and-a-quarter and two-and-a-half inch depth of upper solid portion differed
141 in their operations, if they differed at all, from those had with the fire pots made with solid upper portion of three or three and a half inches, as you have stated.

A. The sizes having the shallowest upper section also had the least diameter of pot and were intended to burn small-sized coal, such as is called, in Troy, chestnut coal, while the other sizes, having a larger diameter of pot, were intended to be used with stove coal, as well as with chestnut coal. If used in this way the operation was about the same in all.

Q. 12. Did you ever use these stoves or experiment with them without having the fuel supplied from a reservoir?

Objected to as immaterial and incompetent.

A. I don't remember.

Q. 13. Have you seen operated a side-burner of Fuller & Warren's manufacture, in which the fuel was permitted to run out of the reservoir without being replaced, so that after the fire pot was last filled the fuel would not be renewed in the same?

A. I have repeatedly.

Q. 14. State what effects in such cases were had in the fire pots having the two and one-quarter and two and one-half solid upper portion and in those having three and three and one-half solid upper portion.

A. In all of the stoves (if the coal was allowed to burn out of itself and the grate not shaken) the coal would burn to an ash at the side, perhaps one-half of the distance from the pot to the centre; coal would at last die out in the centre, leaving a few half-burnt pieces, the whole surface being about level and even with the top

of the pot or slightly below it. Under varying circumstances these measurements might vary somewhat.

Q. 15. Have you made any experiments or seen any experiments made in which the upper solid portion of the fire pot was only two inches or less in vertical depth?

142 A. I have seen fire pots in operation with a less depth of solid portion than two inches; one of these I saw in operation at Mr. Selkirk's office in Albany.

Q. 16. Did you see it in operation with or without a feeder?

A. I saw it with a feeder and also without a feeder.

Q. 17. State whether or not the combustion of the fuel was any different in the slotted fire pot you saw at Selkirk's office when supplied from a fuel reservoir than when supplied by hand.

A. As the fuel was supplied from the magazine, so that there was a considerable depth above the slots, the combustion was much better than when supplied by hand, for in the latter case the surface of the fuel was level with the top of the slots and at times lower.

Q. 18. Was there obtained from the combustion of the fuel in that fire pot as high a temperature of the products of combustion escaping from the top surface of the fuel as is obtainable from fire pots having a depth of solid portion of three or three and one-half inches as was used in the largest sizes of the Keep side-burner?

Objected to upon the grounds that the witness has not shown himself in a situation to answer the question; that in order to make the testimony of any value the stoves should be operated in accurately similar positions.

A. While that fire pot was working with the surface of the coal at the same height as the top of the slots or about that height the cold air entering the slots and not combining with the fuel reduced the temperature considerably below that which was produced by a Keep side-burner when fed properly and under ordinary circumstances. When the pot at Mr. Selkirk's office was fed from the magazine the combustion was very good.

143 Q. 19. When fed from the magazine about what depth was the fuel above the top of the slots?

A. I should say two or three inches.

Q. 20. State what advantage, if any, is the depth of three or three and one-half inches of solid upper portion over the depth of two inches or less of solid upper portion for practical and best operations in stoves for the general public.

Objected to upon the grounds that the witness does not appear to have had any experience that would enable him to answer that question.

A. I have found, as the result of experiment, that the shallower the solid portion the better, provided all entering air combined with the carbon of the coal to form carbonic acid. I have also found that with fine chestnut coal, fed at a uniform depth, about two inches of depth of solid portion of the pot was sufficient, provided no ashes or slate were allowed to remain in this portion of the fire, but in ordi-

nary management, and especially where coal is liable to be larger, it was better to give a little more depth to the pot, as in the construction of these stoves I intended to burn the coal in as thin a layer as possible and also to provide for a clear fire. I have found that in the smallest size two or two and a half inches was safe, but in the larger sizes it was best to make it three or three and a half inches. Unless means are provided for the disposal of ash and slate the depth of the solid portion must be increased. In the case of the side-burner, and I should say in any case, the depth of the solid portion was as small as practicable.

Q. 21. Are you acquainted with the effects of the heat from burning fuel on the side walls of the square or oblong straight-sided fire pots?

A. I am.

144 Q. 22. Please examine the fire pot in the stove marked Defendant's Exhibit Wolfe Stove and state what the effects would be from the heat of fuel in combustion burning in that fire pot with the same degree of combustion as fuel is generally burned in stoves like Complainants' Exhibit 8.

A. I have examined the exhibit and should say that the effect on the lower portion of the pot would be similar—that is, that the effect would be to expand the lower portion of the pot, the pressure of the fuel or other causes causing the lower portion of the pot to bulge outward, and if the upper portion was affected at all (as would likely be the case after a certain length of time) the central part of the upper portion of the Wolfe pot would probably bend inward, while in the round pot like in the Fort Orange the pot would grow larger, but retain its original shape.

Q. 23. What would be the result when in the Wolfe fire pot the upper portion became bent inward?

A. As there is no flange of any account beneath the edge of the pot any inward movement would allow air to pass up between the side of the stove and the edge of the pot, checking a fire that was already burning and making the process of kindling a new fire very slow.

Q. 24. Have you ever had any experience with the use of soft or bituminous coal and hard coal in heating stoves?

A. I have.

Q. 25. From your knowledge, derived from your experience of the use of these two kinds of coal, which of the kinds of fuel, soft or hard coal, is most severe on a cast-iron unlined fire pot?

(Objected to as immaterial.)

A. With two fire pots of the same dimensions, one of which is filled with anthracite and the other bituminous coal, both ignited and burning under the same conditions, the bituminous coal

145 would act more severely on the pot, as it is capable of producing a much more violent heat in a short time than anthracite, and if burned in the two pots for a long time the impurities which most kinds of bituminous coal contain would combine with and weaken the material of the pot.

Cross-examination by Mr. COWEN:

X Q. 25½. What kind of a stove was used in the experiment at Mr. Selkirk's office?

A. An ordinary self-feeding round stove, called the Phœnix, made by Ely & Ramsey, of New York city, similar to the Fort Orange.

X Q. 26. Was the pot slotted for the purposes of the experiment?

A. It was.

X Q. 27. How great was the depth of the solid ring at the top of the fire pot?

A. Not over one-half or three-quarters of an inch.

X Q. 28. When the coal was placed in the fire pot by hand the surface of it was either level or a little below the top of the slots; is that so?

A. It is.

X Q. 29. You did not try the experiment of heaping the coal up by hand two or three inches above the top of the slots, did you?

A. I did not.

X Q. 30. But when the coal was placed in the magazine, so that there was a layer of coal two or three inches above the slots in the pot, you found the combustion very good, did you not?

A. I did not perform the experiment myself, but I found the combustion very good under that condition.

X Q. 31. Have you any reason to suppose that in the stove you saw in Selkirk's office, that when the magazine was used the
146 combustion would be any better with the solid ring at the top of the fire pot two inches deep than it would with a ring one inch deep?

A. If the proportions of the stove were right the surface of the coal would be even with the top of the pot. In such a case the combustion would be much better with two inches of depth than with one.

X Q. 32. Is that merely your opinion, or have you tried the experiment?

A. I have tried the experiment, and know that to be the case.

X Q. 33. When and where?

A. Between October, 1869, and 1872, and in Troy.

X Q. 34. Did you try a ring an inch deep from the top of the fire pot?

A. I tried coal an inch deep, resting against a ring, which amounts to the same thing. I don't think I tried a ring an inch deep.

X Q. 35. What you did try was a wider ring, with different depths of coal, was it not?

A. It was, the depth being measured from the lower edge of the ring.

X Q. 36. And you found that with the coal two inches above the ring the combustion would be better than with the coal one inch above the ring?

A. I so found it.

X Q. 37. Is it not true that in any fire pot, solid or grated, the greater the depth of coal the better the combustion will be?

A. No, sir.

X Q. 38. You mean to say that is so after the coal has become ignited?

A. I do.

X Q. 39. I understood you to say upon your direct examination that in your experiments with the side-burner you found that giving the solid portion of the fire pot a depth of from two to
147 two and one-quarter inches in the small sizes and of three and three and one-half inches in the largest sizes produced the best results; is that so?

A. I did not mean to state it in that way, but to say that it would not do to make the fire pot of a less depth than that.

X Q. 40. You found it would do to make it of that depth, did you?

A. I did.

X Q. 41. Are you acquainted with the Fort Orange stove?

A. I have examined it to-day.

X Q. 42. What size of your side-burner corresponded most nearly to the size of the Fort Orange stove?

A. My No. 10.

X Q. 43. What is the depth of the fire pot in the Fort Orange stove?

A. Depth of fire pot, six and one-half inches; the unslotted portion is three and one-half inches deep.

X Q. 44. What is the vertical depth of the fire pot itself, not measuring to the grate?

A. Five and three-quarter inches, and the unslotted portion is about three and one-half inches.

Recess until 2 o'clock.

Afternoon Session.

Examination resumed at 1.30 p. m.

Cross-examination of W. J. KEEP continued by Mr. COWEN:

X Q. 45. What is the diameter of the Fort Orange stove fire pot?

A. About twelve inches.

X Q. 46. Take a solid fire pot six inches in depth and twelve inches in diameter, with a grate at the bottom, would a layer of coal one inch deep in that fire pot burn as well as a layer two inches in depth?

148 A. No, it would not.

X Q. 47. Would a layer two inches in depth burn as well as a layer three inches in depth?

A. It would not.

X Q. 48. Would a layer five inches in depth burn as well as one six inches in depth?

A. In that fire pot I don't think there would be very much difference.

X Q. 49. Can you say that such a fire pot when full would not maintain combustion better than if the surface of the coal was below the top of the fire pot to any extent—say an inch or more?

Question is vague in that the words "better combustion" does not convey to the witness whether the combustion was understood to be rapid or slow to be better.

A. Yes; better than if more than an inch below the top.

X Q. 50. Did you ever see a stove like the Exhibit Wolfe Stove, to which your attention was called on your direct examination?

A. I never have.

X Q. 51. Then you do not know of your own knowledge what effect building and maintaining a fire in that stove would have upon the fire pot?

A. Well, I should say that the action of the fire on those plates would be the same as on other similar plates which I have seen used in stoves, the action of which I have described.

X Q. 52. Have you ever seen a stove used with a cast-iron square fire pot suspended by a flange from the casing above it?

A. I have seen a stove with a rectangular fire pot so suspended.

X Q. 53. Did you ever see a fire pot used in which the sides were strengthened by vertical ribs on the inside, as in the Exhibit Wolfe Stove?

A. I do not know that I have seen ribs put on in exactly the same manner as they are in that stove.

149 X Q. 54. Would not the effect of those ribs be to strengthen the plates against bulging or twisting and also to keep the plates cool by allowing the air to flow up on the outside of the fuel between it and the plates?

A. Yes.

X Q. 55. Would not the ribs prevent to some extent the contact of the fuel with the plates forming the fire pot?

A. The ribs would so act when the fire was first started to some extent, and without doubt after the fire had run a few days the space between the ribs would be nearly as good a protection as fire brick.

X Q. 56. Would you be willing to say that a stove made like Exhibit Wolfe Stove would not be a practically operative stove?

A. There seems to be space between the wall of the stove and fire pot which would admit air over the top of the fuel, and if at the first using air passed between the ribs it would be quite difficult to kindle a fire and keep it going.

X Q. 57. Are you willing to say that the fire pot in the Wolfe stove constructed as it is would not be as durable as an ordinary circular fire pot without ribs?

A. I should say it would not.

X Q. 58. If you knew that ten or twelve hundred of those stoves had been sold and that they gave good satisfaction and no complaint was ever made by the purchasers would those facts affect your opinion as to its being a practical and successful stove?

A. The possession of such knowledge would not cause me to make a different answer to what I have made.

X Q. 59. How long will an ordinary cast-iron fire pot of a circular form last with constant use?

A. With bituminous coal it will last a year and a half to
150 two years. With anthracite coal I know they will last over five years, yet there are cases where they burned out in a very short time from some local cause.

X Q. 60. Do all cast-iron fire pots have shorter lives than the stoves in which they are placed?

A. All stoves having such a fire pot are constructed with that understanding.

X Q. 61. Have you any means of knowing how long a square fire pot constructed with ribs like the one in Exhibit Wolfe Stove would last, either with bituminous or anthracite coal?

A. It would depend entirely upon the condition in which it was used; therefore I cannot state any definite time.

X Q. 62. With what stoves were the experiments made to which you referred on your direct and cross examinations when you ascertained the best fire pots?

A. With experimental stoves, made previous to the making of the patterns for Keep side-burner, or with the side-burning stoves.

Redirect examination:

R. D. Q. 63. How did the new coal ignite in the stove you saw experimented with at Selkirk's office and having a grated fire pot as it was supplied from the fuel reservoir?

A. The fuel ignited very slowly, because when the new coal was supplied the fire pot was about two-thirds full of coal, only partially ignited, and the new coal extended at least an inch below the upper ends of the slots, allowing the cool air to pass through the coal and into the chimney. It was not until the coal became ignited above the slots that the combustion became rapid.

R. D. Q. 64. In measuring the depth of a fire pot what are the proper points to measure from to find the vertical capacity of the fire pot when it is in the stove for use?

151–212 A. If the stove has a flat bottom grate the measurement should be taken from the surface of the grate to a horizontal plane passing across the upper edge of the fire pot. In the side-burner, the grate being highest in the centre, I measured neither the highest nor the lowest point, but an average between the two.

R. D. Q. 65. In a stove having a fire pot, say, *size* and a half inches deep, and with slots extending upward from the bottom of the fire pot to a distance proportionate to the slots shown in the fire pot in the Hunt patent, what, in your opinion (based on your knowledge derived from your experiments and observations in burning hard coal), would be the results, practical or otherwise, had by the use of such a fire pot?

Counsel for defendant objects to the question as being incomprehensible.

A. If the magazine, as here shown, would supply the coal to the fire pot so that there would be practically no depth of coal above the upper end of the slots the operation of the stove could not be called

successful, and it would appear from the drawings that there would not be much depth of coal above the slots.

Recross-examination:

R. X Q. 66. Suppose in the Hunt patent the space between the bottom of the magazine and the fire pot was occupied by a conical layer of coal, the outside of which was even with the top of the fire basket, in that case would there be any difficulty in operating the stove?

A. Same answer as before to R. D. Q. 65.

67 R. X Q. In your experiments at Selkirk's office, where the fire pot was filled by hand, as you have described, did the fire go out or did the combustion continue?

A. Combustion continued as long as I was present.

WILLIAM J. KEEP.

Subscribed and sworn to before me this 22d day of March, A. D. 1882.

RICHARD P. DUMARY,
Special Examiner by Consent.

Adjourned until to-morrow, 10.30 a. m., to meet at the office of R. P. Dumary, 44 North Pearl street, Albany, N. Y.

* * * * * * *

213 X Q. 259. How deep (I mean in inches, not with reference to any result) must the upper solid portion of a fire pot be to bring it within the scope of the Rathbone & Hailes invention?

A. I am not able to give the depth in inches, but from experiments I have made with Exhibit No. 24, which I continued for two nights and three days, I would judge that about three inches, or it might be three and a half inches (for "large chestnut" coal), would operate well and be within the meaning of that solid upper portion, while with "stove" or "egg" coal it might require a greater depth; but in all cases it should be of such a depth that the air would not readily pass through between the particles of coal without its oxygen being taken up by the highly-heated carbon of the fuel.

X Q. 260. Then, if I understand you correctly, the proper depth of the upper solid portion of the fire pot varies with the size of coal used; is that so?

A. I was speaking theoretically, according to what I observed in my experience; but in practical use, where in some cases "small chestnut" would be used and in others "large chestnut" and
214 some "small stove," the stoves to be practical in all cases should have a depth of solid portion of fire pot, I should say, from three to three and a half inches. This depth accords about with the proportionate depth shown in the stove in the patent in suit, and is the depth generally used by the trade, which I suppose has been well ascertained (by actual practice and experiment) to be the best depth.

X Q. 261. What size coal did you experiment with?

A. It is what we call "large chestnut."

X Q. 262. And you made up your mind the best depth for large chestnut was three to three and a half inches, did you?

A. Not from that experiment only, but from use of fire pots having that depth of solid portion as compared with grated fire baskets having slots extending to near the top and solid fire pots as they were usually made prior to 1874 or 1873.

X Q. 263. Would you have known what was the best depth of solid portion for "large chestnut" coal without experimenting on it?

A. Not very well.

X Q. 264. Did you try "pea coal" or "stove coal?"

A. I did not try "pea coal," but I have tried stove coal, together with other sizes of coal, on many occasions when conducting a series of experiments in 1869, I think.

X Q. 265. Did you try these experiments in 1869 to see what was the proper depth of a solid portion of a grated fire pot?

A. I did not. My experiments were made in view of ascertaining the best depth which was practical to be used generally by the public of fire pot for burning ordinary sizes of coal that are generally used in stoves.

X Q. 266. Can you now tell without experiment what depth of solid portion would be most effective with "pea" coal or "stove" coal?

215 A. I cannot about "pea" coal, but with "stove" coal or large "chestnut" the depths would vary somewhat.

X Q. 267. Did you make any experiments with soft coal? I mean with reference to a grated fire pot.

A. I made experiments with soft coal, but not with reference to a grated fire pot of any kind.

X Q. 268. Do you know that in burning soft coal in a grated fire pot that it is any advantage to have any considerable portion of the fire pot solid?

A. I never tried the experiment only with a solid fire pot.

X Q. 269. Soft coal will burn readily without a grate and without any draught through it, will it not?

A. I have so understood, and I suppose it is so.

X Q. 270. Then would it not be an advantage in burning soft coal to admit as much air as possible to the fuel in the fire pot?

A. I could not say whether under all circumstances it would.

X Q. 271. Your theory is that by making a considerable portion of the upper part of the fire pot solid the draught is forced to go through the body of the fuel, and that such a result is an advantage to the combustion. Is not that so?

A. I do not understand what the interrogator means by the qualification "making a considerable portion of the upper part of the fire pot solid."

X Q. 272. Well, then, by making about three and a half inches solid. With that explanation have I stated your theory correctly?

A. About that depth, either a little more or a little less, according to the size of the coal, would be the depth best adapted in the man-

ufacture of stoves to be used by the public generally. That is what I meant to be understood, and is my theory. Not that because
216 such a depth of solid portion of the fire pot forces the air to pass through the body of the fuel, but because air passing through such a depth of fuel (of the sizes I have mentioned) will produce a higher combustion and a higher temperature of the products of combustion escaping from the top surface of the burning fuel, and thereby make the stove more efficient for heating purposes in cold weather, as compared with the combustion of the fuel and temperature of the products of combustion escaping from the top surface of the fuel, where the fuel is held within a grated cylinder or basket, and also as compared with the combustion of the upper layers of the fuel and the products of the same had from the use of solid fire pots of the depth they were usually made.

X Q. 273. According to your own theory for burning anthracite coal is not a solid fire pot where the draught is compelled to go through the whole body of the coal superior to a fire pot partially grated?

A. That will be according to the circumstance of its depth.

X Q. 274. How will that be with a fire pot six inches deep. Will not a fire pot of that depth be superior to one partially grated?

A. In my opinion it would not, for if it was intended to obtain high combustion in two stoves, one with a six-inch fire pot solid from top to bottom and another six or six and a half inches, having its lower portion grated from two to two and a half inches or more, the higher combustion would be obtained by the latter.

X Q. 275. Do you speak from actual experiment, or is it a mere matter of opinion?

A. I speak from experiment and know that a four-inch fire pot made solid from top to bottom will make the stove more effective for heating purposes than one made six inches deep and
217 made solid, and that one made six inches deep would give better combustion than one ten. This knowledge I have obtained from actual experiment.

X Q. 276. Did you ever take two stoves, with fire pots of the same depth, one solid and one partially grated, and operate them at the same time and under the same conditions to ascertain which would produce the best results?

A. I never did.

X Q. 277. I understand that you think that the fire pot in the Fort Orange stove is within the scope of the Rathbone & Hailes invention as you interpret it. How deep is the solid portion of the fire pot in the Fort Orange stove?

A. I do not mean to be understood to define the depth of the solid portion of the grated fire pot, as it is shown in the patent, by defining its depth in inches. With this explanation I will measure the pot as called for in the question. I find its depth of solid portion to be three and a half inches. The grated portion of the fire pot is two and a quarter inches, making the whole depth of the fire pot five and three-quarter inches, and measuring down to the

top surface of the grate (which is the proper measurement to ascertain the depth of the pot) it is six and a half inches.

X Q. 278. Suppose that the depth of the solid portion of the Fort Orange fire pot was but three inches, would it still be within the scope of the Rathbone & Hailes invention, as you interpret it?

A. In my opinion it would be.

X Q. 279. Suppose the depth of the solid portion were two and a half inches?

A. It might possibly be with the diameter shown in that stove, but I would not attempt to construe the scope or limit which would be required to be within the patent.

X Q. 280. Suppose the depth of the solid portion to be but two inches, would it still be substantially the Rathbone & Hailes fire pot?

A. I would not undertake to state.

Adjourned until 10.30 o'clock.

218 ALBANY, N. Y., WEDNESDAY, *April* 5, 1882.

The examination was continued at 10.30 a. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Cross-examination of ALEXANDER SELKIRK continued by Mr. COWEN:

X Q. 281. Suppose the depth of the solid portion of the Fort Orange fire pot to be but an inch and a half, would it be substantially the same fire pot shown and claimed in the Rathbone & Hailes patent?

A. In my opinion it would not be such fire pot, for the reason that it would operate differently.

X Q. 282. You state that the Fort Orange fire pot is grated up to a point about two and a quarter inches above its lower edge. Suppose it was grated to a point only one and a half inches above its lower edge, would it still be substantially the same fire pot shown in the Rathbone & Hailes patent?

A. Under some conditions it would and other conditions it would not, in my opinion.

X Q. 283. To what conditions do you refer?

A. The condition in which it would be substantially the Rathbone & Hailes fire pot would occur should the grate be at such a distance below, say an inch, as would give a depth of opening between the upper surface of the grate and the upper terminating ends of the slots, which would be sufficient to receive and hold an ash zone of, say two, inches above the grate, which might be formed by the accumulation of ashes after burning from five to seven hours, and at the same time permit the admission of air to the body of the fuel above the ash zone through the upper end portions of the slots.

In such a case I believe a fire pot having the length of slots
219 mentioned in the question in connection with three to three and a half inches of upper portion would be substantially

the kind of fire pot shown in the Rathbone & Hailes stove; but if the grate was so arranged with the fire pot that its upper surface would be on a plane with the lower end of the fire pot, or to a short distance above the same, so that the ash zone formed by the accumulation of ashes in a short time would fill the same up to the upper end of the slots or past the same, I am of the opinion that in such a case the slots would not operate as do the slots in the fire pot in the Fort Orange stove and be of little or no value whatever.

X Q. 284. Suppose that in the Fort Orange fire pot, arranged with reference to the grate as it is in the Fort Orange stove, the grating extended but an inch above the bottom of the fire pot, would that still be substantially the same fire pot shown in the patent in suit?

A. I would not undertake to give an opinion, as I believe it belongs to the court to decide under what conditions the fire pot would be the same as that used in the Fort Orange stove.

X Q. 285. Why does it belong to the court to decide when the case put is that of a grating an inch deep and to you to decide when the grating is half an inch deeper?

A. I don't decide in either case. I only give an opinion dependent on conditions by which certain results or effects are produced?

X Q. 286. Why is your opinion proper in one case and improper in the other?

A. It is improper in the hypothetical case, as it would be a mere conjecture on my part, while in the other case I speak from knowledge derived from the constant use of a stove throughout the whole of the past winter. The last two or three questions related to degrees of extension of the slots, and in my opinion in some cases the vertical extension of the slots might be so short that they
220 would cease to have the function of the slots as they are used in the Fort Orange stove, while in other cases, by reason of their length, although they might be excessive as compared to those in the Fort Orange stove, yet they would be substantially the same as employed in the fire pot of that stove, because of substantially the same operations.

X Q. 287. Did you ever see a stove made in accordance with the description in the Rathbone & Hailes patent?

A. I would ask to what part of the Rathbone & Hailes stove the question refers?

X Q. 288. It refers to the whole stove.

A. I think I have used four such stoves, excepting in one particular, and that is in the specific form of the upper set of draught openings, but these stoves had in their construction additional elements, viz., fuel magazines, and three of them low-down grates and revertible flues leading to and from the base of the stove, and all mica doors opposite the slots in the fire pot; but the operating parts of the stove other than the reservoirs and flues mentioned were substantially the same as the stove shown in the Rathbone & Hailes patent.

X Q. 289. Do you mean to say it requires actual experiment for

you to give an opinion as to whether a fire pot is substantially the one shown in the patent in suit?

A. Not in all cases.

X Q. 290. Does it in any case?

A. There might be cases where the dividing line between difference in degree and difference in kind should be placed.

X Q. 291. Is that your answer?

A. Yes.

X Q. 292. Do you mean that if you found that the fire pot worked well you would say it was substantially the same, and that if it did not work well it was not the same.

A. I do not mean to be so understood.

221 X Q. 293. What would be the object of your experiment then?

A. My object would be to ascertain whether or not the pots said to be the same or different operated in substantially the same manner and effected the same results.

X Q. 294. And you cannot by comparing the fire pot shown you or suggested to you with the patent give an opinion whether it would or would not operate in the same way. Is that what you mean?

A. I think I could without experiment, with the knowledge I have already obtained from experiment and from use. If two fire pots were handed to me each, say, one foot in diameter and six and one-half inches deep from the top edge down to the grate, and in one pot the upper portion was made solid to the depth of three or three and a half inches, and the remaining part was grated or slotted, while in the other pot the solid portion extended down to five inches or five and a half from the top of the grate, I would say that the latter was substantially a solid fire pot, and would not operate either with the fuel, the ashes, or the air the same as would the first-mentioned fire pot, while the results would also be different. Mere notches made in the lower portion of the fire pot to a short distance would not, in my opinion, be equivalents to the vertical slots shown in the Rathbone & Hailes stove or the Fort Orange.

X Q. 295. Now, I would like to have you answer X Q. 284.

A. With the grate arranged as in the fire pot in the Fort Orange stove I hardly think that with slots of vertical extension mentioned in the question, and ash zone of the depth which would arise from several hours accumulation of ashes, the slots would operate as do the slots in the Fort Orange stove or the stove in the

222 patent in suit for admitting air within the body of the fuel and promoting the combustion of the same and producing that high temperature of products of combustion as would be had from a stove with the fire pot slotted as in the stove in the patent in suit. For this reason I do not think it is the same.

X Q. 296. You stated in answer to X Q. 283 that with the grate placed in the bottom of the fire pot and not below it slots extending an inch and a half above the bottom of the fire pot would not be substantially the Rathbone & Hailes invention. Suppose those slots extended two inches above the bottom of a fire pot in which a grate

was fixed, as shown in the Rathbone & Hailes drawings, would that be substantially the fire pot described in the patent in suit?

A. The best answer I can give to this question is that it would approach to being the same, and I am not prepared to give any better answer.

X Q. 297. Suppose the heights of the slots mentioned in the last question were two and a half inches, what would you say then?

A. I should say they were substantially the same as in the Rathbone & Hailes invention, for the reason that they would operate substantially the same and accomplish the same results.

X Q. 298. Your theory of the advantage of making the upper portion of the fire pot solid is based on the idea that there must be a sufficient quantity of fuel; also the top of the slots in the fire pot to cause the draught to go through the body of the fuel. Is not that so?

A. Not exactly as stated in the question. My opinion is, based on my knowledge derived from experiment and use, that the fuel must be of sufficient depth above the upper ends of the slots that the air passing through the body of the fuel above the plane of the upper ends of the slots would not readily pass into the combustion chamber above in the same condition as it entered the body of the
223 fuel—that is to say, the depth should be such that the oxygen of the air would be separated from the nitrogen and made to unite with the carbon of the fuel and produce high combustion of the same in the upper portion of the fire pot.

Recess until 1.30 p. m.

Afternoon Session.

The hearing was resumed at 1.30 p. m.

Cross-examination of ALEXANDER SELKIRK concluded:

X Q. 299. Does it make any difference whether the layer of coal above the top of the slots is in the suspended fire pot or in the combustion chamber of the stove above the fire pot?

A. It would make no difference as long as that depth of fuel was used, even if the wall of the stove was used to form an extension of the fire pot above the slots.

X Q. 300. Suppose that in the Rathbone & Hailes stove the flange upon the casing of the fire chamber was at a point just above the ledge B, and the solid portion of the fire pot were removed all but one inch, upon which a flange was constructed, resting on the flange of the casing, would not the stove operate in the same manner as when the fire pot is constructed in the mode described in the Rathbone & Hailes patent?

A. The stove would operate in the same manner should the walls of the stove (above the flange from which the fire pot is suspended) be used to closely envelope three or three and a half inches of fuel; but in such a case it would not be the fire pot that would operate but the side walls of the stove in conjunction with the suspended solid or

grated portion of the fire pot, and by this form of construction the enlarged outlet above the fire pot and around and above the same would not be produced, as the wall of the stove would be substituted for the solid portion of the fire pot.

224–245 X Q. 301. Suppose the slots in the Rathbone & Hailes fire pot were extended upwards to a point within an inch and a half from the top of the pot and the stove was filled with coal to a point level or nearly level with the bottom of the feed door, shown in the stove, in that case would there not be sufficient coal above the slots to insure the beneficial result that you say is produced by the Rathbone & Hailes partially grated fire pot?

A. From experiments I have made it would.

Adjourned until Monday, April 10, 1882.

* * * * * * *

246 It is hereby admitted by complainants and stipulated between the parties hereto that the entries in the pass book of William Hailes, Exhibit 25, on pages 13, 16, and 17 of said book, were made in the year 1864 and relate to work performed during that year.

Counsel for complainants offers in evidence a certified copy of letters patent to Zebulon Hunt, No. 50073, dated Sept. 19th, 1865, and requests the examiner to mark the same Complainants' Exhibit No. 29.

Counsel for defendant objects to the introduction of said patent as an exhibit upon the ground that it is immaterial, incompetent, and hearsay.

Also a certified copy of the model of the fire pot of the Hunt model, filed with his application, on which patent No. 50073 was issued, and dated Sept. 19th, 1865, and requests the examiner to mark the same Complainants' Exhibit No. 31.

Also a certified copy of the model filed with their application, on which patent No. 53035, dated Nov. 21, 1865, was issued, and requests the examiner to mark the same Complainants' Exhibit No. 32.

247 COMPLAINANTS' EXHIBITS.

Complainants' Exhibit No. 1.

No. 51085.

The United States of America to all to whom these letters patent shall come:

Whereas Lewis Rathbone and William Hailes, of Albany, New York, have alleged that they have invented a new and useful improvement in coal stoves, which they state has not been known or used before their application; have made oath that they are citizens of the United States; that they do verily believe that they are the first inventors or discoverers of the said improvement, and that the

same has not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant according to law to the said Rathbone and Hailes, their heirs, administrators, or assigns, for the term of seventeen years from the twenty-first day of November, one thousand eight hundred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Rathbone and Hailes in the schedule hereto annexed and is made a part of these presents.

In testimony whereof I have caused these letters to be made
248 patent and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-first day of November, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the ninetieth.

[L. S.]

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

T. C. THEAKER,
Acting Commissioner of Patents.

The Schedule Referred to in These Letters Patent and Making Part of the Same.

To all to whom it may concern:

Be it known that we, Lewis Rathbone and Wiliam Hailes, of Albany, county of Albany and State of New York, have invented a new and improved circular stove; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of the front of our improved stove.

Figure 2 is a diametrical section, taken from front to rear through the stove, showing our improvements.

Figure 3 is a section taken through the stove in the horizontal plane indicated by the red lines *x x* in figure 2.

Figure 4 is a top view of the detachable fire pot and grate.

Figure 5 is a side view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

249 This invention relates to certain novel improvements on that class of stoves which are known as "cannon" or circular stoves, in consequence of their consisting of only one cylinder or

cannon, without flues or separated fire chambers. Such stoves have generally been constructed with a contracted outlet, and also with provision for admitting air above the fire. This we desire to obviate, as we have found that a much more perfect combustion can be maintained by enlarging the outlet for the smoke and admitting air through the sides of a suspended fire pot at all points, and thus facilitating combustion by supplying oxygen to the burning coals beneath the surface of the fire pot, as will be hereinafter described.

Another object of our invention is to construct an open, circular fire pot, which can be applied to or removed from the stove at pleasure, with a grate in its bottom, said grate being so applied that it can be moved for shaking the ashes from the fire pot when desired, as will be hereinafter described.

To enable others skilled in the art to understand our invention we will describe its construction and operation.

In the accompanying drawings, A represents the bottom plate of the stove, which is made circular, and B represents the cylindrical ash-pit section, which is placed eccentrically upon the circular bottom plate A, so that a comparatively wide space is left in front, as shown in figures 2 and 3, which is gradually contracted as it approaches the back of the stove on both sides thereof.

Above this cylinder B is the body of the stove that forms the fire chamber C, which terminates at its upper end in a flaring outlet chamber D, through which the products of combustion which are unconsumed escape into the smoke pipe *a*.

With the body or central portion C of this stove is an annular flange, *b*, the object of which is to support the fire pot G by receiving upon it a——

Rathbone and William Hailes, November 21st, A.

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250 The fire pot is made of cast iron of a flaring form and of such diameter as to leave a free space, *d*, all around it when arranged within the stove. It extends from the enlarged fire chamber C down into the ash chamber B, and it is made with vertical openings through its sides for the admission of air into the body of coal within it.

The bottom of this fire pot is an open grate, G, which may be so applied that it can be moved around a central pin, *e*, or turned upon a horizontal bar, *g*, or both of these movements may be provided for.

It will then be seen that the fire pot and its grate are united together, so that both can be removed from the stove together.

By thus connecting the grate and fire pot together and arranging them within the stove, so that they are supported or suspended by means above mentioned, they can be removed very readily from the stove when it is necessary to renew them.

At the junction of the body of the stove with the ash-pit section B is a ledge, *h*, extending entirely around the top of said section, as shown in figure 3. This ledge is perforated at regular intervals, and it is covered by means of a marble ring plate, *i*, which is also per-

2 Sheets—Sheet 1.

RATHBONE & HAILES.

Coal Stove.

Patented Nov. 21, 1893.

RATHBONE & HAILES.

2 Sheets—Sheet 2.

Coal Stove.

No. 51,085.

Patented Nov. 21, 1865.

No. 47. Hailes et al. & Albany Stove Co. p. 253

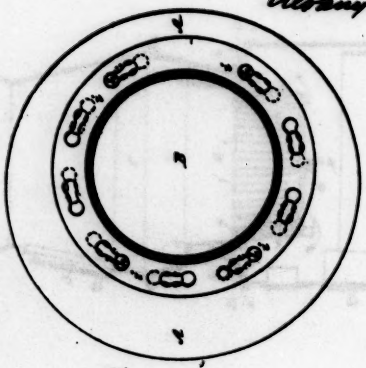


Fig. 3.



Fig. 4.

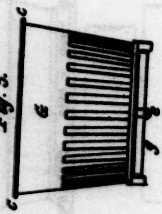


Fig. 5.

Witnesses:
R. Campbell
Edw. Schuyler

Inventors:
Thos. Rathbone
Wm. Hailes
by their Atty
Marcus Hunt Rathbone

forated in a manner corresponding to the perforations through the ledge. This ring plate, *i*, being provided with a knob or handle, it constitutes an annular register for regulating the admission of air into the section B of the stove below the point of suspension of the fire pot, as indicated by the arrows in figure 2.

The flanges *b* and *c* effectually close the upper portion of the space *d* surrounding the fire pot, so that no air can pass at this point; the air which enters the smoke chamber above the fire pot must either be admitted through the register J, in the feed door, or it must pass through the fire pot.

Our object is to maintain such an intense heat——

251–267 flange, *c*, that is formed upon the upper edge of said pot, as shown in figure 2.

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in the fire pot, by the free supply of oxygen to the incandescent coal therein—all around this pot—that there will be little or no smoke formed after the fire is fully started. In this way we obtain a more perfect combustion, and are enabled to burn soft coal and obtain the greatest heating effects therefrom.

Having thus described our invention, what we claim as new and desire to secure by letters patent is—

1st. Arranging a perforated fire pot with a grate bottom within a circular stove having provision for the admission of air below the point of suspension of said fire pot, substantially as described.

2d. The combination of an annular horizontal register with a suspended fire pot which has perforated sides, substantially as described.

LEWIS RATHBONE.
WILLIAM HAILES.

Witnesses:
W. R. BUSH, JR.
WM. J. DUNN.

(Here follow diagrams marked pp. 252, 253.)

* * * * * * *

268 STATE OF NEW YORK, } *ss:*
County of Albany, }

I, Richard P. Dumary, of the city and county of Albany, in the State of New York, as special examiner by consent, under and pursuant to the 67th rule of equity (as amended), do hereby certify as follows:

That the following-named witnesses were, at the dates and places hereinafter mentioned, each carefully examined, cautioned, and sworn to testify the truth, the whole truth, and nothing but the truth, to wit:

Alexander Selkirk and George Baker, on the 31st day of October, A. D. 1881, at Albany, N. Y.

Joseph M. Northrop, on the 13th day of March, 1882, at the same place.

Josiah P. Eldridge, on the 15th day of March, 1882, at the same place.

William J. Keep, on the 23d day of March, 1882, at Troy, N. Y.

William Hailes, on the 10th day of April, 1882, at Albany, N. Y., and

James Morrison, on the 15th day of April, 1882, at Troy, N. Y.

That their depositions were at the times and places above mentioned reduced by me to writing in the presence of each of said witnesses, and that each of them subscribed to the same in my presence.

That I am not counsel or attorney for either of the parties to this cause and am not in any manner interested in the event of said cause.

That I have compared the foregoing with the original depo-
269 sitions of the said witnesses, and that the same is in all respects a true copy of said original depositions and of every part thereof.

In testimony whereof I have hereunto subscribed my name as special examiner this 15th day of April, A. D. 1882.

RICHARD P. DUMARY,
Special Examiner by Consent.

270 *Stipulation.*

In the Circuit Court of the United States for Northern District of New York. In Equity.

WILLIAM HAILES *et al. against* ALBANY STOVE CO.

It is hereby stipulated and agreed by and between the parties to the above cause and their respective counsel that Richard P. Dumary, a notary public in and for the county of Albany, N. Y., shall act as special examiner, as per 67th rule of equity (as amended) in the examination of witnesses examined on behalf of defendant company in the above cause, said depositions — be used at the final hearing of said cause.

Dated Troy, N. Y., Jan'y 16th, 1882.

T. G. YOUNGLOVE,
Solicitor for Complainants.
ESEK COWEN,
Solicitor for Defendant.

In the Circuit Court of the United States for the Northern District of New York. In Equity.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK

against

THE ALBANY STOVE COMPANY.

Testimony on behalf of defendant company, taken by consent and in accordance with stipulation hereto annexed before Richard P. Dumary, a notary public in and for the county of Albany and State of New York, as special examiner, under and in pursuance of the 67th rule of equity (as amended), to be used at the final hearing of the above cause.

271–279

TROY, N. Y., *January 16th*, 1882.

Pursuant to notice, the parties to the above-entitled cause met at the office of Messrs. Smith, Fursman, and Cowen, No. — State street, Troy, N. Y., on Monday, January 16th, 1882, for the purpose of proceeding with the examination of witnesses on behalf of defendant company.

Present: T. G. Younglove, Crescent, N. Y., for complainants; Esek Cowen, Troy, N. Y., for defendant.

* * * * * * *

280 *Deposition of William E. Hagan.*

WILLIAM E. HAGAN, being duly sworn, in answer to interrogatories propounded by Mr. COWEN, of counsel for defendant company, deposes and says as follows:

1 Q. What is your name, age, residence, and occupation?

A. William E. Hagan; age, fifty-six; residence, Troy, N. Y.; occupation, mechanical and chemical expert.

2 Q. State, if you please, what opportunities you have had to become acquainted with stoves and improvements upon stoves, and with patents for stoves and such improvements, and with legal controversies relating to such patents.

A. I have for the last twenty years of my life resided in a locality wherein and in its vicinity were made and put upon market a large majority of the stoves and furnaces used in the United States during that period. I have during the time named been consulted in regard to the inventions on stoves and furnaces by a majority of the manufacturers of stoves of the United States residing here and elsewhere, and I have been engaged and consulted in a large majority of the litigated cases concerning the inventions in stoves and furnaces which have occurred during the time I have named. I am now engaged and employed to examine into the state of the art in a majority of the cases in the United States circuit court pending in which inventions in stoves and furnaces are matters of legal controversy. I have also acted as solicitor of patents in a great many

cases in which the inventions in stoves were made the sub-
281 ject of application for patents, and have made myself, by reading and education, acquainted with what constitutes invention in stoves and furnaces.

3 Q. Have you examined the patent granted to Rathbone & Hailes under date of Nov. 21, 1865; and, if so, do you understand the construction and operation of the several devices therein described?

A. I have read the patent and I believe I understand the matter connected with it in the question.

4 Q. Have you examined Complainants' Exhibit No. 8 (Fort Orange stove), and do you understand the operation and construction thereof?

A. I have examined it and do understand it.

5 Q. In the specification of complainants' patent in suit the patentees state as follows:

"This invention relates to certain novel improvements on that class of stoves which are known as cannon or circular stoves in consequence of their consisting of only one cylinder or cannon without flues or separated fire chambers."

What do you understand in the trade to be known as "cannon" stoves?

A. "Cannon" stoves were first used in the form of a straight cylinder prior to 1862, and in such "cannon" stoves the wall of the fire pot was the wall of the stove. They were arranged to burn the coal by a direct draught leading to the exit and without the arrangement of flue passages to carry the products of combustion to the base and thence to the exit. After 1862, the time that I have named, these stoves were made with an expanded zone above the fire pot, around and above the top of the fire pot, very much as shown in the patent in suit.

6 Q. In all these "cannon" stoves, what was the location of the exit pipe?

282 A. On the top of the stove or on the side of the stove near the top, so that, practically, the products of combustion passed directly out at or near the top of the stove.

Counsel for complainants objects to the question as immaterial and irrelevant.

7 Q. Do you understand that the term "cannon" stove as understood in the trade would include a stove provided with a fuel cylinder or magazine for the purpose of holding unignited coal?

Same objection as the last.

A. It would not, as the stoves were classified in the art.

8 Q. Would that term, "cannon" stove, in your judgment, as used in the trade include a stove provided with return flues on the outside of the fire chamber and fire pot to conduct the heat to the base of the stove?

Same objection as last above.

A. It would not, the terms used applying to two different classes of stoves.

9 Q. What kind of a stove in these respects is the "Fort Orange," Complainants' Exhibit No. 8?

A. It is a direct draught magazine stove.

10 Q. From your examination of the complainants' patent in suit what, in your judgment, is the nature of the invention, if any, therein described?

A. The invention consists, according to the language of the patent, in the manner of applying a grated fire pot to a "cannon" stove with the fire pot so combined with a grated bottom that the grate and fire pot may be removed from the stove together. The language of the patent upon this point and relating thereto is as follows: After describing the method by which this construction is produced the patent states:

"It will thus be seen that the fire pot and grate are united together, so that both can be removed from the stove together. By thus connecting the grate and fire pot together and arranging
283 them in the stove so that they are supported or suspended by means above mentioned they can then be removed very readily from the stove when it is necessary to renew them."

The fire pot is shown as suspended within the cylinder of the stove by means of a flange upon the fire pot and an engaging shelf or flange on the inner stove wall. The fire pot itself, the patent provides, shall have grated sides, and constructed so that air can reach the fire through the sides of the fire pot at all points; and in addition to compensate for this large air admission at the base and around the sides of the fire pot at all points an enlarged outlet is constructed, the language of the patent being as follows:

"Such stoves (*i. e.*, cannon stoves) have generally been constructed with a contracted outlet, and also with provision for admitting air above the fire. This we desire to obviate, as we have found that a much more perfect combustion can be maintained by enlarging the outlet for the smoke and admitting air through the sides of a suspended fire pot at all points, and thus facilitating combustion by supplying oxygen to the burning coals beneath the surface of the fire pot, as will be hereinafter described."

The language last quoted provides for a grated fire pot which would admit air through its sides at all points. The fire pot shown in the drawing, however, is not so grated that air can be admitted at all points on its side, the fire pot being grated considerably over half its area; and no description occurs in the patent which states that better results are obtained by grating it partly or wholly further than the words which I have quoted indicates—that better results would be produced by "admitting air through the sides of a suspended fire pot at all points."

Recess until 2 o'clock p. m.

284 *Afternoon Session.*

The examination was resumed at 2 o'clock p. m.

Direct examination of WILLIAM E. HAGAN continued.

By Mr. COWEN:

(Answer to Q. 10 concluded.) Another feature of the invention which in the first claim is combined with those I have already named is the mechanical means for admitting air to the draught chamber (or ash-pit chamber, as it is termed in the patent), and which consists in the construction of the "ledge *h* extending entirely around the top of said section, as shown in Fig. 3. This ledge is perforated at regular intervals, and it is covered by means of a movable ring plate, *i*, which is also perforated in a manner corresponding to the perforations through the ledges. This ring plate *i*, being provided with a knob or handle, constitutes an annular register for regulating the admission of air into section B of the stove below the point of suspension of the fire pot, as indicated by arrows in Fig. 2."

This ledge *h* consists of the outward extension of the base of the stove and its inward contraction on a beveled line to join with the stove body. This ledge has openings in it, and there are also openings in the stove damper which is around the stove and at the top of the ledge, and formed by an annular plate which is moved around and on the top of the ledge to open and close the draught opening.

No method is shown or described in this patent "for enlarging the outlet for the smoke," which is stated as one of the features of the invention; neither is any proportion of enlargement stated, which would be better than any other in the connection with which it is used.

The object of the invention is stated to be "to maintain
285 such an intense heat in the fire pot, by the free supply of oxygen to the incandescent coal therein all around this pot, that there will be little or no smoke formed after the fire is started. In this way we obtain a more perfect combustion, and we are enabled to burn soft coal and obtain the greatest heating effects therefrom."

Now, the first claim reads as follows:

"1st. Arranging a perforated fire pot with a grate bottom within a circular stove having provision for the admission of air below the point of suspension of said fire pot, substantially as described."

As a summary of what I have stated, that part of the invention covered by the first claim consists of a grated fire pot having a grate bottom so constructed that both can be removed from the stove together, and the grated fire pot, wholly or partly grated upon its sides, with air admitted to the draught chamber by means of apertures formed in the surface of a projecting ledge, which apertures are opened or closed by means of an annular damper plate, "*i*,"

placed over said ledge and having openings in said plate, all of the elements named in the claim and their application being conditioned as an improvement upon what was known as a "cannon" stove.

Assuming where I have used the word "invention" as relating to the patent, I have considered it without regard to the prior state of of the art and merely to the language of the claims of the patent.

11 Q. Is the Fort Orange stove, Complainants' Exhibit No. 8, a "cannon" or "circular" stove?

Counsel for complainants objects to the question as immaterial and irrelevant.

A. It is a "circular" stove, but in no case a "cannon" stove.

12 Q. Does it consist of only one cylinder or cannon without flues?

A. It does not.

286 13 Q. State why.

A. The exit flue in the Fort Orange stove is taken from the combustion chamber at or near the top of the fire pot into an offset flue formed upon the fire-pot section; instead of having an enlarged outlet it has a contracted outlet and an annular flue above the fire, formed by the inner wall of the stove and the outer wall of the magazine, placed within the stove and above the fire, while in the cannon stove, shown in the patent, there is a direct passage to the exit from the fire through its whole length from the fire to the top.

14 Q. Comparing the Fort Orange stove with the "cannon" stoves that were in general use prior to November, 1865, is the space for the escape for the products of combustion in the Fort Orange stove larger or smaller than in the prior stoves referred to?

A. They are much smaller.

15 Q. Do you find in the Fort Orange stove a grate and fire pot so constructed that they can be removed from the stove together?

A. I do not.

16 Q. What is the relation of the grate and fire pot in the Fort Orange stove?

A. It is supported upon arms projecting from the inner sides of the ash-pit wall and entirely independent of the fire pot.

17 Q. At the date of this patent, November 21st, 1865, was there anything novel in admitting air to a draught chamber of a stove through apertures through the wall of the draught chamber?

A. There was not, broadly considered.

18 Q. Was there any novelty in admitting air through several apertures through the wall of the draught chamber?

A. There was not.

19 Q. In your judgment, is there any useful result pro-
287 duced by admitting air to a draught chamber through several small apertures instead of one large aperture?

A. There is not any useful result produced by one that is not produced by the other.

20 Q. The grated fire pot having been placed in a draught chamber, to which air is admitted by a single aperture, is there, in your opinion, any different result produced when a grated fire pot is

placed in a draught chamber to which air is admitted by several apertures?

A. There would be no difference whatever in the result of the two.

21 Q. At the date of this patent, November 21st, 1865, was it new to extend the draught chamber in the shape of a ledge below the bottom of the fire chamber and to provide that ledge with a series of draught apertures extending around the stove?

A. It was not new.

22 Q. Can you mention any stove in which that ledge was used?

A. A stove called "The Times," made by Hicks and Wolfe, had a ledge projecting downwardly and outwardly on the base, upon which ledge a damper was placed having several openings; also the stove called "The Monarch," I think, made by James Wager. James Easterly had made a stove and patented the same Feb. 13, 1855, in which a ledge had been formed around a draught chamber of a stove by means of extending the same outwardly from the stove body on a beveled line and constructed with apertures in said ledge, upon which ledge was placed an annular damper plate having openings therein, and which plate could be moved around said bevel so as to open and close the draught apertures formed in the ledge, and which was mechanically constructed to operate in the same manner as that shown in the patent in suit.

23 Q. Have you examined the stove marked Defendant's
288 Exhibit Wolfe Stove, and do you understand the construction and the operation of the same?

A. I have examined it and believe I understand the construction and operation of the same.

24 Q. I wish you would compare that stove with the stove described in the complainants' patent in suit, with special reference to the elements mentioned in the claim of the patent, and state how far they are identical with the same and how they differ.

Adjourned until Thursday, January 19th, 1882, at 10 o'clock a. m.

TROY, N. Y., THURSDAY, *January 19th*, 1882.

The hearing was resumed, pursuant to adjournment, at the offices of Messrs. Smith, Fursman and Cowen, on Thursday a. m., at 10 o'clock.

Present: T. G. Younglove for complainants; Esek Cowen for defendant.

Direct examination of WILLIAM E. HAGAN resumed.

By Mr. COWEN:

Interrogatory No. 24 repeated.

A. I find upon examining Defendant's Exhibit Wolfe Stove it is composed of two sections, consisting of a combustion chamber and draught chamber, formed within and by the walls of the stove, and the two sections separated by means of a suspended fire pot, which has upon the upper edge a flange, which engages with a projecting shelf upon the inner wall of the stove to divide the enclosed space,

as I have stated. The fire pot in the Wolfe stove is flaring and bears such relation to the side walls of the draught-chamber section as to leave a free space all around it within the stove; this suspended fire pot is grated upon the bottom and two of its sides, and the grate is connected with the fire pot so that the fire pot
289 and grate can be removed together from the stove. This stove is provided with a means for the admission of air to the draught chamber below the point of suspension of said fire pot, the means for the admission of air to the draught chamber consisting of a swinging door formed in the side walls of said chamber. This stove contains the elements of a perforated fire pot with a grate bottom and partially-grated sides suspended by a flange from the fire pot, and shelves upon the inner walls of the stove functionally performing, by construction, the same office as a portion of the stove—as the fire cylinder (perforated and suspended) shown and described in the patent in suit, there being this difference, however, that the Defendant's Exhibit Wolfe Stove is a square stove and that shown in the patent in suit a circular one. The fire pot is grated in the Wolfe stove at the sides, and at the front and rear the grated bottom is basketed. While the Wolfe stove also contains the devices for admitting air, as I have stated, below the point of suspension of said fire pot, it has no ledge formed upon its base with openings therein and an annular damper plate placed thereon to regulate the amount of air admitted to the draught chamber.

25 Q. The fire pot in Defendant's Exhibit Wolfe Stove is square instead of circular. So far as the admission of air to the fuel and the combustion of the fuel is concerned, does it, in your judgment, make any difference whether the fire pot is round or square?

A. It does not. Air being an elastic mixture, it would fill the whole base, whether there was one opening or many and whether the stove was round or square.

26 Q. With reference to the objects mentioned in the last question, does it make any difference whether the lower portions of the fire pot is grated at the front and rear or whether the grate is curved at the front and rear so as to be a practical continuation of the fire pot?

290 A. It does not; the effect would be the same in either instance.

27 Q. Is there any element referred to in the first claim of complainants' patent in suit that you do not find in Defendant's Exhibit Wolfe Stove; and, if so, what are such elements?

A. There are no differing elements, broadly considered. I find the elements of the suspended fire pot with a grate bottom and the means for the admission of air below the point of suspension of said fire pot bearing the same relation to each other as the parts described in the patent, with the exception that the mechanical means employed to admit air to the draught chamber in the Wolfe stove does not consist of the ledge and damper; the Wolfe stove is a square stove, and that named in the claims of the patent a circular stove.

28. Q. Referring to the 2d claim of complainants' patent, state

whether or not you find in the Fort Orange stove an annular horizontal register.

A. I do not; I find that air is admitted to the draught chamber of the Fort Orange stove by means of draught openings formed in the door of the ash pit or draught chamber; there are no other openings designed for the admission of air to the chamber than those I have named; there are, however, three slits formed in the side of the ash chamber wall; two of these slits are used for the purpose of reaching the fire by means of a poker to clean the top of the grate, and are provided with plates, by which they can be opened or closed separately, the front opening being closed at all times, when the grate is shaken, by means of a shaker bar, which is attached to an inside plate which continually closes the opening.

29 Q. Does the Fort Orange stove belong to the class of stoves known as the "anti-clinker?"

A. It is so known in the trade.

30 Q. Do stoves of the "anti-clinker" class usually contain
291 small slits in the sides of the ash pit opposite a space between the upper surface of the grate and the lower end of the fire pot?

A. They are generally so constructed.

31 Q. For what purpose were those slits intended to be used?

A. They are used as a means to insert a poker to clean off the clinkers and ashes from the top of the grate.

32 Q. Are they ordinarily used or intended to be used for the purpose of admitting air to the draught chamber?

A. They are not intended to be used for any purpose other than I have stated; that is the object of their construction.

33 Q. You have stated in the course of this examination that the Fort Orange stove is a direct draught stove. On seeing the entire stove do you find that to be quite correct?

A. It is not quite correct. It has no circulation in the base, as I have stated in my former answer; but on seeing the whole stove I find that in the offset flue attachment in the rear it has a short diving flue leading from the combustion chamber downwardly to an ascending flue formed in the same rearward extension of the stove. When I examined the stove Monday I had nothing before me but the lower section.

34 Q. Please compare the stove described in the complainants' patent with that described in Defendant's Exhibit Russel Patent, with especial reference to the elements named in the first claim of the complainants' patent, and state to what extent, if any, you find the same elements embodied in the Russel stove?

A. Two modifications of the Russel stove are shown in the patent, one of which is a tapering fire pot or basket having graded sides to contain ignited fuel and "so suspended, mounted, or fitted that
rotary motion may be communicated to it." Another modi-
292 fication consists in "constructing the fire basket with perforated sides all around it by means of tubes" and placing at the bottom of the cylinder a bottom for the fire basket, "which may be solid or with apertures and having a pivot, *i*, formed on it

to take a hold on the plate J, on which pivot it may be moved or turned around," &c., and "again, instead of tubes solid bars may be used instead of making the fire dishes to turn on the pivot, as previously described. I sometimes hang them by a projection or flange formed upon the upper flange of a fire dish, which flange rests upon a corresponding projection on the inside of the casing, as shown in dotted lines in figures 1 and 2." H is a plate underneath the plate E; the plate H has holes formed in it and is capable of being turned or moved partially around, so as to bring the holes in a position to coincide with similar holes formed in plate E; air is thus admitted to the space in which fire is placed, and from thence through the openings in the fire dish to the burning fuel. I find all the elements of the first claim there with the exception of the particular mechanical means employed to admit air to the draught chamber by means of a projecting ledge and annular damper plate.

35 Q. Please compare the stove described in complainants' patent in suit with Defendant's Exhibit Hunt Patent with especial reference to the elements named in the first claim of complainants' patent and state to what extent, if any, you find these elements in the said Hunt stove.

A. I find in the Hunt patent that it describes and illustrates a grated fire pot of tapering form suspended within a draught chamber and provided with a grated bottom, and so constructed that the grate and fire pot can be removed from the stove together, the fire pot being suspended in the same manner as is shown in the patent in suit, the manner of attachment being thus described:

293 "It is supported by means of a rim or flange at the top, resting on a corresponding flange projection from the inside of that section of the stove (see figure 1). * * * Within the bottom band or rim of the fire pot is the grate G."

This fire pot I find to be suspended within the draught chamber, with a free space all around the same, and so grated and constructed that there is a means provided for "admitting air through the sides of the suspended fire pot at all points." I also find that the stove described in the Hunt patent named in the question has a means for admitting air to the ash-pit section. I also find that, so far as the features of a suspended perforated fire pot, constructed to admit air through the sides of the latter at all points, with the fire pot suspended at its upper edge by means of a flange on its upper rim and a corresponding flange or rim on the inner stove wall and provided with a grated bottom, and so constructed that the grate and fire pot can be removed from the stove together, and also provided with a means to admit air to the draught chamber below the point of suspension of said fire pot; that the Hunt patent contains all the elements and mechanical construction described and shown in the patent in suit, with the exception that the mechanical means provided for the admission of air to the draught-chamber section differs from that shown in the patent in suit. The Hunt patent does not illustrate or describe any openings formed in the ledge upon the base and the connected annular plate which opens and closes them that is shown in the patent in suit.

Where I have stated that air is admitted at all points in the Hunt fire pot I mean to be understood as saying at all points below the rim where it suspended, where for a short distance downwardly the pot is not grated.

36 Q. On the examination of Mr. Selkirk, complainants'
294 expert, he apparently defined the complainant's fire pot to be one, the upper portion of which was solid, the lower portion perforated. Upon cross-examination he was asked the following question: To what extent vertically could the fire pot be slotted or perforated from the bottom upward to escape infringement of the patent in suit as you understand it? To which he gave the following answer:

"It should be slotted upward vertically to such an extent that the air passing into the fire pot through the upper end of the slots would readily pass into the combustion chamber above and damp down and finally cause an extinguishing of the fuel and combustion in the fire pot." Do you understand that such an effect would be produced by grating all that portion of the fire pot that projects into the draught chamber?

A. I do not. I cannot conceive how that air passing into the fire pot "through the upper end of the slots would readily pass into the combustion chamber above and damp down and finally cause an extinguishing of the fuel in the combustion chamber" in any manner. The air passing in would certainly support combustion whether the slots were longer or shorter, but that it would "dampen down" combustion seems impossible. I cannot conceive how it could promote combustion and at the same time dampen it down, in any event.

37 Q. Suppose you put fuel in an open grate or basket not connected with any fire chamber above it, as in this stove, will the fire go out?

A. It will not until it has burned up the fuel. Parlor grates are particularly designed to burn anthracite coal, the hardest of all kinds of coal, and these are grated upon their vertical depth at their fronts, where the influence of the air passage over the top would be more likely to dampen the fire. Fire pots are made for burning fuel in the open air and grated upon their sides and bottom, and
295 they work very successfully in burning bituminous coal, which is stated as one of the objects named in the patent in suit.

38 Q. Please examine the patent granted to Alexander Harrison, marked Defendant's Exhibit Harrison Patent, and state what elements, if any, named in the first claim of complainants' patent you find described in the stove of the Harrison patent.

A. I find in the exhibit named a stove having a fire pot grated at its lower end upon the sides and the grated portion suspended within the draught chamber of the stove, with a free space all round the same and between it and the wall of the stove. Beneath this fire pot is a grate, which is supported independent of the fire pot by a bar passing through the side walls of the base section upon which the grate rests. This difference is found to exist, however, when this

device is compared with that shown in the patent in suit, that it has no annular damper plate for admitting air through a ledge formed on the top of the ash-pit section, and the grate is supported from the side walls of the ash-pit section and independently of the fire pot. The patent states that these vertical apertures or upright grates are provided "with spaces between them for the admission of air."

39 Q. Please examine the patent granted to James Morrison, Jr., marked Defendant's Exhibit Morrison Patent, and state to what extent, if any, you find the elements named in the 1st claim of complainants' patent in the Morrison stove.

A. I find that the patent named in the question contains a fire pot which is partially grated at its lower end. This grated portion is suspended within the walls of the draught chamber of the stove, so as to leave a free space between the grated portion of the fire pot and the stove wall, and which is provided with a grated bottom and is constructed to be rotated or turned to dump, and there
296–438 are also means provided for admitting air to the draught chamber through the ash-pit door and also through a ledge formed upon the top of the ash-pit section. In these respects it embodies some of the same features or elements that occur in the patent in suit. It has no annular damper plate or series of openings formed on the ledge on the top of the ash pit, as shown in the patent in suit.

40 Q. I observe that the Morrison specification uses these words: "I construct the fire grate (F) in a frame * * * this frame will contain a vertical grate which will be of any desired capacity." Have you been acquainted with stoves made according to this Morrison patent?

A. I have.

41 Q. As a matter of fact, about how far did the "vertical grate" (as the inventor called it) extend into the draught chamber of those stoves? What was the depth of the vertical grate in the draught chamber of those stoves, in the size of a stove corresponding to the Fort Orange?

A. About three and a half inches, as I remember it.

42 Q. Was it grated all the way to the top of the draught chamber?

A. It was.

43 Q. Did you use one of those stoves yourself and how long?

A. I did use one of them for four or five winters, I am not certain which; certainly four, and it may have been five.

44 Q. Did the fact that the portion of the fire pot projected into the draught chamber all the way up either dampen the fire or cause it to go out?

A. It did not; I never noticed any such effect.

45 Q. Is there anything in the complainants' patent in suit which limits it as to the depth of the fire pot or as to the extent it shall project into the draught chamber?

A. There is not; nothing whatever.

Recess until 2 o'clock p. m.

* * * * * * *

439 Counsel for defendant company, by and with the consent of counsel for complainants, offers in evidence the following letters patent of the United States, the same to be received in evidence and marked by the examiner with the same force and effect as if the same had been set forth in the answer of defendant company:

Letters patent of the United States granted to J. H. Buchanan November 2d, 1858, for improvements in heating stoves, No. 21938, and request the examiner to mark the same "Defendant's Exhibit Buchanan Patent."

Filed in evidence and marked as requested.

Also letters patent of the United States granted to S. E. Hewes July 12th, 1859, for improvements in heating stoves, No. 24738, and request the examiner to mark the same "Defendant's Exhibit Hewes Patent."

Filed in evidence and marked as requested.

Also letters patent of the United States granted to J. Schmedinghoff November 22d, 1864, for improvements in portable furnaces, No. 45181, and request the examiner to mark the same "Defendant's Exhibit Schmedinghoff Patent."

Filed in evidence and marked as requested.

Also certified copy of Patent Office model of Rathbone and Hailes' stove, and request the examiner to mark the same "Defendant's Exhibit Certified Copy Model of Rathbone and Hailes' Stove."

Filed in evidence and marked as requested.

Defendant rests.

RICHARD P. DUMARY,
Special Examiner by Consent.

440 (2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the bound volumes of the library of this office of the specification and drawing in the matter of the English letters patent granted Robert Russell January 13, 1857, No. 113, for stoves and fireplaces.

In testimony whereof I, V. D. Stockbridge, acting Commissioner of Patents, have caused the seal of the Patent Office to be affixed this fourteenth day of December, in the year of our Lord one thousand eight hundred and eighty-one, and of the Independence of the United States the one hundred and sixth.

V. D. STOCKBRIDGE,
Acting Commissioner.

Letters Patent No. 113, dated Jan. 13, 1857.

ROBERT RUSSELL, of Derby, Eng.

Stoves and Fireplaces.

Specification in pursuance of the conditions of the letters patent filed by the said Robert Russell in the Great Seal Patent Office on the 13th July, 1857.

441 To all to whom these presents shall come:

I, Robert Russell, of the firm of Fowkes & Russell, of Derby, in the county of Derby, iron founders, send greeting:

Whereas Her Most Excellent Majesty Queen Victoria, by her letters patent bearing date the thirteenth day of January, in the year of our Lord one thousand eight hundred and fifty-seven, in the twentieth year of her reign, did, for herself, her heirs and successors, give and grant unto me, the said Robert Russell, her special license, that I, the said Robert Russell, my executors, administrators, and assigns, or such others as I, the said Robert Russel, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend within the United Kingdon of Great Britain and Ireland, the Channel Islands, and Isle of Man an invention for "improvements in stoves and fireplaces" upon the conditions (amongst others) that I, the said Robert Russel, my executors or administrators, by an instrument in writing under my or their or one of their hands and seals, should particularly describe and ascertain the nature of the said invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said letters patent:

Now, know ye that I, the said Robert Russell, do hereby declare the nature of my said invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement thereof, reference being had to the drawings hereunto annexed—that is to say:

442 My invention consists in placing within an outer case a fire dish or fire basket intended to contain the ignited fuel, and so suspended, mounted, or fitted that rotary motion may be communicated to it, whereby the fuel is worked about, ashes, etc., are shaken down into the ash pit or cinder tray beneath, and (in stoves of the description called self-feeding air stoves) sticking of the fuel and choking of the feed passages are prevented.

And the invention further consists in constructing the fire basket with perforated sides or with openings all around it, and in forming the stove case with openings all around it, into which latter openings talc is inserted, so that the fire may be seen on all sides of the stove, whereby a cheerful appearance is imparted. The openings in

the case may be provided with sliding plates (fitted with talc or not) for regulating the draft. The fire basket may be made with a pivot at the bottom stepped into a socket in the stove case, or with a top flange by which it is hung on bearings within the case, or it may be mounted on a wheel or otherwise fitted, and rotary motion may be communicated to it by inserting a lever into a hole or series of holes in fire basket, and thereby turning it wholly or partially round, or in any other suitable manner.

A modification of my invention consists in the following arrangement:

The fuel is received on a stationary block or grate, round which fire bars, arranged in a circular or cylindrical form, or a cylindrical frame or fire basket with apertures in the sides, are or is made to revolve. The bars, frame, or basket resting on a flange or on the grate, the fuel is disturbed and the ashes, etc., shaken down into the ash pit. One or more abutments is or are provided within the stove case, against which the revolving fire basket may be brought for the better shaking out of the ashes.

443 The invention further consists in so constructing cooking stoves or close stoves that they may, when desired, be converted into open stoves by fitting at the back a number of collapsible screens or doors, which, when the stove is used as a close stove, are folded back against the covings; but when it is to be used as an open stove the plate over the fireplace is removed and these folding screens brought forward and opened out in such manner as to form a kind of bonnet or flue, one screen being so made as to form an arch over the back part of the fire, under which the products of combustion are drawn through this flue into the ordinary flue or chimney.

Having thus stated the nature of my said invention, I will proceed more fully to describe how the same is to be performed, reference being had to the drawings hereunto annexed. Figure 1 is an elevation of my improved stove, having part of its outer case broken away, so as to shew the interior. Figure 2 is a vertical section of the same.

A is the fire dish, composed of a number of grate bars, with sufficient openings between them for the admission of air. These bars may be fixed at their tops to a ring, B, and at their bottoms to a plate, C, having a pivot, D, formed or cast on it. The pivot D is inserted in a hole in the plate E, in which it is free to turn. F is a piece cast or otherwise formed on the fire dish, in which piece there is a hole formed or drilled, or a series of pieces and holes may be formed round the fire dish of a sufficient size to receive the end of a bar for moving or turning the fire dish. This bar is indicated by the dotted lines G. A pin or projecting piece F′ is formed on the fire dish A, which abuts against a fixed piece or pin, G′, in the plate E, so that when the fire dish is moved smartly a shock is given to it which causes the fuel to descend and the ashes to fall through the fire-dish grating. The fire dish may be cast in one piece and have openings cored out, so as to form the bars in the dish itself. H is a plate

444 underneath the plate E. The plate H has holes formed in

it, and is capable of being moved or turned partially round, so as to bring its holes in a position to coincide with similar holes formed in the plate E. Air is thus admitted to the space in which the fire dish is placed, and from thence through the openings in the fire dish to the burning fuel. The plate H may be fixed on the lower end of the fire-dish pivot D, if desired, or it may be loose and capable of being moved or turned independently. To shut off the air the plate H is moved or turned into a position so that the holes in the plate H will not coincide with those in the plate E, and communication will consequently be cut off between the ash pit I and space J, in which the fire dish is placed, or, instead of regulating the air by the plates H H, it may be regulated by a ventilator placed in the drawer front of the ash pit. K K is an enclosed space between the fuel hopper M and the external case K′ K′, and is closed at top by an annular lid or cover, I, secured to the casing K′ K′ and round the fuel hopper M. This space acts as a fuel chamber and hot-air case, from which the heat is radiated through the apartment. The fuel pipe K″ carries the remaining smoke and gases to the chimney. The fuel hopper M is closed by a cover, M′, which is fitted thereto in such a manner as to be easily removed when a fresh supply of fuel is required. The hopper M is made conical, with its greatest diameter placed a little above the fire dish A. This arrangement allows the fuel to sink gradually as it burns away. The hopper M is composed of two parts, *d* and N, which are joined together at *a a*. The part *d* is of sheet iron and the part N of cast iron of considerable thickness at its lower edge, so as to withstand the intense heat which is produced at this point. To serve the same purpose the interior of the casing P is made thicker and shelving inwards all around, as at O. The sides of the casing P, from
445 *b* to *c*, may be perforated or slotted holes may be formed in them, and in the perforations or slots pieces of talc may be inserted, so that the fire may be seen from all sides, whereby a cheerful appearance is imparted. Instead of placing the talc in the sides, I sometimes slot the sides of the case and cover them up with sliding pieces similarly slotted but having talc inserted, so that by sliding the pieces along until the talc stands opposite the openings in the casings the fire will be seen.

Figure 3 is a view of one of the sides of the casing P, with the openings formed in it, in which the talc Q is inserted; or, instead of making one sliding piece (with a number of slotted holes with talc in them) for each side of the stove, a sliding piece with a piece of talc inserted may be used for each slotted hole in the casing P.

In Figure 4 I have shown a section of part of a stove with its fire basket composed of a series of tubes set in a ring at top and another at bottom. *d d* are the tubes. *e* is the upper ring, and *f* the lower one. The tubes *d d* are inserted through suitable holes formed in the rings *e* and *f*. The lower end of the tubes *d d* are open to the ash pit, which ash pit communicates with the atmosphere. The air, in passing from the ash pit upwards through the tubes *d d*, gets heated and is gathered into a hot-air box, *g*, at the upper ends of the tubes *d d*. From this it escapes by an aperture of

sufficient size to correspond to the area of the openings in the tubes *d d*. This aperture is formed all around the stove by the overhanging lip *h* of the hot-air box *g* and the upper ring *e*. At this point the hot air comes into contact with the flame and gases from the ignited fuel and complete combustion takes place. The lower ring *f* may be formed in a piece with the bottom of the fire basket and may be made solid or with apertures, and having a pivot, *i*, formed on it to take into a hole on the plate *j*, on which pivot it may be moved or turned round. Apertures may be formed
446 in the plate *j* to correspond to similar holes in the bottom of the fire basket, so as to regulate the admission of air to the fuel, similar to that already described with reference to figures 1 and 2. The tubes *d d* and rings *e* and *f* may all be made to turn together upon a solid fixed bottom, the tubes being made to communicate with the ash pit, as before described. Instead of tubes solid bars may be used. Instead of making the fire dishes to turn on a pivot, as previously described, I sometimes hang them by a projection or flange formed on the upper ring of the fire dish A, which flange rests upon a corresponding projection on the inside of the casing, as shown in dotted lines at *k k* in figures 1 and 2. In figures 4 and 5 I have shown a similar mode in dotted lines at *l l*. In this case the ring *e*, through which the tubes are passed, is made broader, so as to rest on a corresponding projection on the inside of the casing P.

Figure 5 is a plan of the tubular fire dish with perforated bottom.

And having now described the nature of my said invention, and in what manner the same is to be performed, I declare that I claim—

First. The placing of hollow perforated metal fire baskets or dishes formed with either solid or tubular bars in the interior of stove cases in such manner, whether supported on pivots or flanges, as to be capable of being turned or jerked round so as to shake down the fuel and ashes, as before described.

Second. Perforating the sides of such stove casings throughout their whole circumferences and inserting pieces of talc or other similar material in the perforations so that the fire may be seen from either side or all around.

447 Third. The several methods of constructing stoves, as hereinbefore described, and represented in the drawings hereunto annexed.

In witness whereof I, the said Robert Russell, have hereunto set my hand and seal this tenth day of July, one thousand eight hundred and fifty-seven.

ROBERT RUSSELL. [L. S.]

Ex'd: C. F., I. M., O. F.

(Here follows diagram marked p. 448.)

449 (2175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted Hunt & Miller June 14, 1864, No. 43155, for improvement in reservoir stoves.

In testimony whereof I, V. D. Stockbridge, acting Commissioner of Patents, have caused the seal of the Patent Office to be affixed this third day of January, in the year of our Lord one thousand eight hundred and eighty-two, and of the Independence of the United States the one hundred and sixth.

[L. S.] V. D. STOCKBRIDGE,
Acting Commissioner.

(No. 43,155.)

United States of America to all to whom these letters patents shall come:

Whereas Zebulon Hunt, of Hudson, New York, has alleged that he has invented a new and useful improvement in reservoir stoves (he having assigned his right, title, and interest in said improvement to himself and William J. Miller, of Greenport, N. Y.), which he states has not been known or used before his application;
450 has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement and praying that a patent may be granted for that purpose:

These are, therefore, to grant, according to law, to the said Hunt and Miller, their heirs, administrators, or assigns, for the term of seventeen years from the fourteenth day of June, one thousand eight hundred and sixty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used the said improvement, a description whereof is given in the words of the said Zebulon Hunt in the schedule hereunto, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this fourteenth day of June, in the year of our Lord one thousand eight hundred and sixty-four, and of the Independence of the United States of America the eighty-eighth.

[L. S.] J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

D. P. HOLLOWAY,
Commissioner of Patents.

451 *The Schedule Referred to in These Letters Patent and Making Part of the Same.*

To all whom it may concern:

Be it known that I, Zebulon Hunt, of the city of Hudson, in the county of Columbia and State of New York, have invented new and useful improvements in the construction of a vertical draft coal-burning stove, and I do hereby declare that the following is a clear, full, and exact description of the construction and operation of the same, reference being had to the annexed drawings and letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a vertical section of the whole stove; figure 2 is a perspective view of the same; figure 3 is a perspective view of the grate tipping, with its accompanying devices for shaking and dumping; figure 4 is a view of the grate G in its proper or horizontal position, showing its pins or cogs on the under side of its rim so arranged that any two of them will embrace the shake bar *e;* figure 5 is a view of the interior of chamber A, showing the truncated funnel or circular hopper *s s*, the partition K, which divides the hot air from the cold-air draft; the square aperture in bottom of chamber A (which is also the bottom of the stove), through which the warm air current descends into the ash pit, and also the circular open bottom of funnel or hopper *s s*, through which it ascends to the grate and fire pot. The darts indicate the course of this warm-air current or draft.

Letter A is the bottom draft chamber.
" B " coal reservoir.
" C " air chamber surrounding the reservoir.
" D " cast-iron ring to protect chamber.
" *a* " curved crank attached to the grate shaft.

452 Letter *b* is the handle to operate this crank.
" *d* " left-hand direct and cold-air draft.
Letter *d'* is the right-hand circuitous and hot-air draft.
" *e* " shaker *c*, grate pin, or center.
" *h h* " roof to chamber.
" *i i i* " apertures for passage of atmospheric air into air chamber C and out of the same into the fire chamber.
M M " two tiers of mica plates.
G " bottom grate (partly tipped in figure 3), exhibiting the pins or projections on the under side of rim.
P " fire pot.

My improvement consists in constructing the fire pot of curved slats or bars, so as to exhibit, with the aid of a double tier of mica plates, as much of the fire, or nearly so, as an open grate, and in

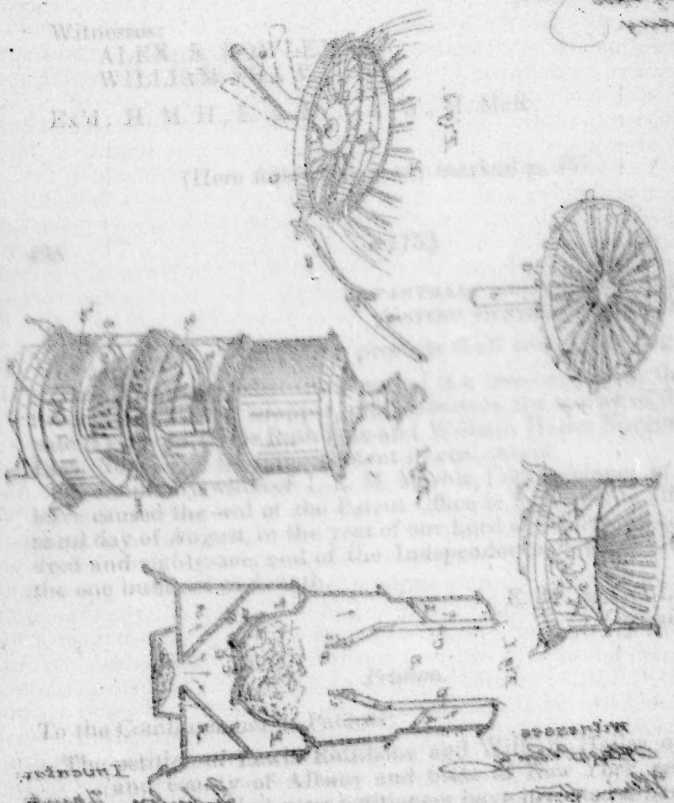
combining therewith the funnel-shaped hopper and chamber A for heating the air which enters the bottom draft before it comes in contact with the fire, whereby its brightness is preserved; in so arranging and constructing the bottom grate, with its accompanying devices (see figure 3) that it may be both rotated and tipped; in admitting atmospheric air through small apertures in the top of the stove into a chamber surrounding the coal reservoir and thence through similar apertures in the bottom into the fire chamber, so as to consume the gases arising from the burning coal, and also in supplying the lower extremity of the reservoir with a cast-iron ring as a protector, which is movable and easily replaced with another when required. I construct my stove in cylindrical form, similar to other coal burners, but I provide it with two stories or tiers of transparent mica plates, so that the fire may be seen almost as much as if in an open grate (see figure 2). The fire pot P is made of cast-iron bars or strips arranged either in funnel
453 or basket form (see Figure 2), bound together by a rim of cast iron at top, all converging or terminating in a band or rim at bottom, the whole being cast together. It is supported by means of a rim or flange at top, resting on a corresponding shoulder or projection from the inside of that section of the stove (see Figure 1). This rim is inclined so that coal and ashes may not lodge there. Within the bottom band or rim of the fire pot is the grate G. The bars of this grate all radiate from an elevated conical center to the rim. This rim is provided with notches or projections on its under side, in or between which the shake bar *e* operates. The inner end of this bar is forked or slotted, so as to embrace the center pin *c* of the grate as a fulcrum, while it allows the grate to be tipped and its contents discharged into the ash pit by means of the crank *a* and handle *b*, which also serve, by the help of a catch or a notch, to hold the grate in its place. Both these devices are within the stove and comparatively out of sight, but easily operated outside. Near the bottom and separating it from the fire is a truncated funnel or circular hopper, *s s*, which also forms the top to the bottom warm air draft chamber. This conveys all the coal and ashes that fall through the fire pot into the ash pit. The bottom draft is divided into direct or cold air and circuitous or warm air; the former is employed to kindle the fire and the latter to keep it steady and bright. The heated air coming in contact with the bright fire in furnace and grate does not deaden or diminish its brightness. The cast-iron ring D at bottom of reservoir B is removable, and can be replaced with another whenever required. It is provided with a flange around its upper end, resting on a corresponding one on the inside of the lower extremity of the coal reservoir. The chamber C, surrounding reservoir B, is designed to admit atmospheric air into the fire chamber, so that becoming heated it may com-
454 bine with and consume the gases arising from the burning coal. Small holes in the top of the stove *i i i* serve to admit the air into the chamber C, and similar holes through the bottom of this chamber admit it, after becoming heated, into the fire chamber. Doors are placed in front in the second

story for supplying coal when but little fire is required and also in the base or first story for more convenient access to the grate; an ash pan is placed beneath to receive the ashes falling from the grate and furnace and which also serves, when partly drawn, as a direct draft. The course of the draft is indicated by the darts on figure 1. The cold air entering at the left-hand bottom draft, *d*, passes down through an aperture in the bottom into the ash pan and thence directly to the grate and fire pot; this kindles the fire. When it enters the right-hand bottom draft *d*, the left being closed, it circulates in chamber A (coming in contact with the truncated funnel or circular hopper which forms the top or covering of draft chamber A, and thereby becoming heated) until it passes entirely round the stove and thence down through the aperture in the bottom and thence up through the aperture in the bottom and thence up through the circular bottom of funnel or hopper *s s* to the grate and furnace or fire pot P, both of which operate as a grate. The hopper *s s* or roof of chamber A terminates at the margin of circular opening in bottom of stove and coincides with it so as to make the chamber perfectly tight. To the axis of the grate is attached the curved crank *a*, having for a handle to operate it the bar *b* (figure 3), which projects through the shell of the stove and which also, by means of a notch and catch, or notch alone (see figure 2), holds the grate in place, or, when desired, is employed to cant or tip the same so as to deposit its contents into the ash pan below. The shaker or lever bar *c* also projects through the shell of the stove and operates horizontally in a slot, but no dust or ashes can escape through these apertures. The pipe hole is separated from the fire
455 chamber by a collar or roof, which has apertures in front for the free passage of the smoke and unconsumed gases (if any), while the pipe hole is on the back of the stove and near the top. This retards the escape of the heat until it is all expended in and through the stove, and more of it economized than with any other stove now in use. I contemplate lining the rim and upper part of the fire pot P with fine brick. The pins or projections on the under side of the rim of the grate (see figure 3), since the grate itself can be revolved on its center pin *e*, enable it to be shaken at any point of its revolution—that is to say, whatever may be the position of the grate, if the shake bar *c* is embraced by any two of these pins, it (the grate) may be shaken. All other grates must and can only be shaken and tipped when in one and the same position. I am aware that a grated fire pot, but of very different construction from mine, has been used by D. G. Littlefield and others in a base-burning coal stove. Mine is a grated fire pot of peculiar form and construction used and designed for vertical or upright draft and not for horizontal draft or base-burning stoves. The admission of cold air directly to these grated fire pots or furnaces will disappoint and defeat the object of their construction if that object be the pleasing exhibition of a bright fire. This can only be attained by heating the air before it strikes the bright coals in the furnace. My arrangement for heating the air which enters the bottom draft *d* and for preserving the brightness of the fire is, I believe, novel, and will effect the object desired.

Z. HUNT.

Magazine Stove.

No. 43,155. Patented June 14, 1864.



Z. HUNT.

Magazine Stove.

No. 43,155. Patented June 14, 1864.

No. 79. Northern Dist. of Albany Stat Company. p. 457

Fig. 3.



Fig. 4.

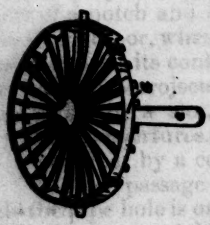


Fig. 2

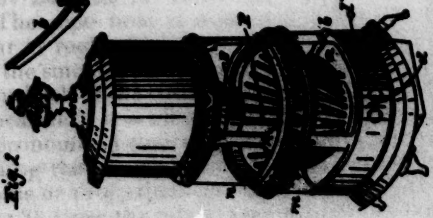


Fig. 1.



Witnesses:

Inventor:
Z. Hunt.

Claim.—What I claim as my invention, and desire to secure letters of patent of the United States, is—

1st. Employing the circular inclined partition or hopper *s s* for the combined purpose of forming the hot air chamber or flue A A; of conducting the coals and ashes into the ash pan, and of
456–494 preserving the brightness of the fire by shielding it from the cold air, substantially as and in the manner set forth.

2d. The shake bar *e*, crank *a*, and handle *b* when used in combination with the revolving grate G, having projections on its lower edge, substantially in the manner and for the purpose set forth.

3d. The combination of fire pot P with grated sides and base suspended within the ash pit as shown with the fuel reservoir B substantially as described.

ZEBULON HUNT.

Witnesses:
ALEX. S. ROWLEY.
WILLIAM SHAW.

Ex'd: H. M. H., E. A. M., J. A. W., M. McK.

(Here follows diagram marked p. 457.)

495 (2–175.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the files of this office of the file wrapper and contents in the matter of the letters patent granted Lewis Rathbone and William Hailes November 21st, 1865, No. 51085, for improvement in coal stoves.

In testimony whereof I, E. M. Marble, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this third day of August, in the year of our Lord one thousand eight hundred and eighty-one, and of the Independence of the United States the one hundred and sixth.

E. M. MARBLE,
Commissioner.

Petition.

To the Commissioner of Patents:

The petition of Lewis Rathbone and William Hailes, of the city and county of Albany and State of New York, respectfully
496 represents that your petitioners have invented a new and improved circular stove, which they verily believe has not been known or used prior to the invention thereof by your petitioners. They therefore pray that letters patent of the United States may be granted to them therefor vesting in them and their legal representa-

tives the exclusive right to the same upon the terms and conditions expressed in the act of Congress in that case made and provided, they having paid fifteen dollars into the Treasury and otherwise complied with the requirements of said act, and they hereby authorize Messrs. Mason, Fenwick and Lawrence, of Washington, D. C., to act as their attorneys in presenting the application and in making all such alterations and amendments as may be required.

LEWIS RATHBONE.
WILLIAM HAILES.

50. L. R. W. C. Sept. 13, '65. 50.

Oath.

STATE OF NEW YORK, }
Albany City and County, } *ss:*

On this thirteenth day of September, 1865, before the subscriber, a commissioner of deeds in and for said city and county, personally appeared the within-named Lewis Rathbone and William Hailes and made solemn oath that they verily believe themselves to be the original and first inventors of the within-described circular stove, and that they do not know or believe that the same was ever before known or used, and that they are citizens of the United States.

G. L. STEDMAN,
Commissioner of Deeds, Albany, N. Y.

5 5
G. L. S.
Sept.
5 5

497 To all whom it may concern:

Be it known that we, Lewis Rathbone and William Hales, of Albany, county of Albany, and State of New York, have invented a new and improved circular stove, and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which figure 1 is an elevation of the front of our improved stove; figure 2 is a diametrical section, taken from front to rear through the stove, showing our improvements; figure 3 is a section taken through the stove in the horizontal plane indicated by the red line *x x* in figure 2; figure 4 is a top view of the detachable fire pot and grate; figure 5 is a side view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on that class of stoves which are known as "cannon" or circular stoves in consequence of their consisting of only one cylinder or cannon, without flues or separated fire chambers. Such stoves have generally been constructed with a contracted outlet, and also with provisions for admitting air above the fire. This we desire to obviate, as we have found that a much more perfect combustion can be maintained by enlarging the outlet for the smoke and admitting air through the

sides of a suspended fire pot at all points, and the facilitating combustion by supplying oxygen to the burning coals beneath the surface of the fire pot, as will be hereinafter described. Another object of our invention is to construct an open circular fire pot which can be applied to or removed from the stove at pleasure, with a grate in its bottom, said grate being so applied that it can be removed for shaking the ashes from the fire pot when desired, as will be hereinafter described. To enable others skilled in the art to under-
498 stand our invention, we will describe its constructions and operations. In the accompanying drawings A represents the bottom plate of the stove, which is made circular, and B represents the cylindrical ash-pit section, which is placed eccentrically upon the circular bottom plate A, so that a comparatively wide space is left in front, as shown in figures 2 and 3, which is gradually contracted as it approaches the back of the stove on both sides thereof. Above this cylinder B is the body of the stove, that forms the fire chamber C, which terminates at its upper end in a flaring outlet chamber, D, through which the products of combustion which are unconsumed escape into the smoke pipe *a*. Within the body or central portion, C, of this stove is an annular flange, *b*, the object of which is to support the fire pot G *y* by receiving upon it a flange, *c*, that is formed upon the upper edge of said pot, as shown in figure 2.

The fire pot is made of cast iron of a flaring form and of such diameter as to leave a free space, *d*, all around it when arranged within the stove. It extends from the enlarged fire chamber C down into the ash chamber B, and it is made with vertical openings through its sides for the admission of air into the body of coal within it. The bottom of this fire pot is an open grate, G′, which may be so applied that it can be moved about a central pin, *e*, or turned upon a horizontal bar, *g*, or both of these movements may be provided for. It will thus be seen that the fire pot and its grate are united together so that both can be removed from the stove together. By thus connecting the grate and fire pot together and arranging them within the stove so that they are supported or suspended by means above mentioned they can be removed very readily from the stove when it is necessary to renew them. At the junction of the body of the stove with the ash-pit section B is a ledge, *h*, extending entirely around the top of said section, as shown in
499 figure 3. This ledge is perforated at regular intervals and it is covered by means of a movable ring plate, *i*, which is also perforated in a manner corresponding to the perforations through the ledge. This ring plate *i*, being provided with a knob or handle, it constitutes an annular register for regulating the admission of air into the section B of the stove below the point of suspension of the fire pot, as indicated by the arrows in figure 2.

The flanges *b* and *c* effectually close the upper portion of the space *d* surrounding the fire pot, so that no air can pass at this point. The air which enters the smoke chamber above the fire pot must either be admitted through the register J in the feed door or it must pass through the fire pot. Our object is to maintain such an intense heat in the fire pot by the free supply of oxygen to the incandescent

coal therein all around this fire pot that there will be little or no smoke formed after the fire is fully started. In this way we obtain a more perfect combustion, and are enabled to burn soft coal and obtain the greatest heating effects therefrom.

Having thus described our invention, what we claim as new and desire to secure by letters patent is—

1st. Arranging a perforated fire pot with a grate botton within a circular stove having provision for the admission of air below the point of suspension of said fire pot, substantially as described.

2d. The combination of an annular horizontal register with a suspended fire pot which has perforated sides, substantially as described.

LEWIS RATHBONE.
WILLIAM HAILES.

Witnesses:
W. R. BUSH, JR.
WM. J. DUNN.

500 U. S. PAT. OFF., *Oct.* 5, 1865.

GENT'M.: The third claim in your application for patent for circular stove has been anticipated in the patent of Z. Hunt, June 14, 1864, for coal stoves, and the fourth is simply an arrangement to suit the taste or convenience of the manufacturer, but not a novelty to demand a patent. You will find the like arrangement in many devices in common use. See also Moses Bratt's patent, May 24, 1864.

Therefore these claims should be erased. The within drawing and specification are accordingly returned.

L. D. M.

Rathbone and Hailes, care of Mason, Fenwick and Lawrence, Washington, D. C.

To the Hon. T. C. Theaker, Commissioner of Patents.

SIR: In the matter of our application for a patent on a stove we hereby amend the specification by erasing the 3d and 4th claims.

Oct. 6, 1865.

LEWIS RATHBONE,
WILLIAM HAILES,
By their attorneys, MASON, FENWICK AND LAWRENCE.

501 Memorandum of fee paid at United States Patent Office, $15.
Inventors, Lewis Rathbone and Wm. Hailes.
Invention, stove.
Date of payment, Sept. 15, 1865.
Fee, $15, 1st Gov't.
Solicitors, Mason, Fenwick and Lawrence.
Memorandum of fee paid at U. S. Patent Office, $20.
Inventor-, Lewis Rathbone and Wm. Hailes.
Invention, stove.

Date of payment, 1865, Nov. 10.
Final fee, $20.
Solicitor-, Mason, Fenwick and Lawrence.

502–543 1865.

No. 51085.

Lewis Rathbone and
Wm. Hailes,

Of Albany,

Insert after line 11, on page 104:

3rd. A perforated fire-pot which is constructed with a flange around its upper edge and a grate in its lower end, substantially in the manner described.

4th. Arranging a circular stove eccentrically upon a circular base-plate, A, substantially as and for the purpose described.

Recorded vol. 186, page 176.
Circular, Oct. 19, 1865.
Mason, Fenwick & Lawrence, pres't.

1865.

Spec. and 1 drawing, Oct. 5, 1865.
Ex.: E. S. L., C. F.

544 TROY, N. Y., TUESDAY, *April 25th*, 1882.

The examination was resumed at 1.30 p. m.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

WILLIAM E. HAGAN recalled in behalf of complainants.

Examined by Mr. COWEN:

1 Q. Are you acquainted with the stove of the defendant's known as the Fort Orange?

A. I am, and have operated one in my office for the six weeks last past.

2 Q. Have you made experiments with that stove with a view of ascertaining whether or not there is any practical advantage in using a fire pot partially grated over one of the same size wholly grated or grated to a point very nearly to the top?

A. I have made experiments within the time I have named, and these experiments were made with a fire pot, shown in Complainants' Exhibit No. 8 (Fort Orange stove), and then taking it out and putting in another fire pot of the same size which is grated upon its sides within an inch and a half of its top rim.

3 Q. Please state fully and in detail what experiments you made with those fire pots and the conclusions at which you arrived.

A. I operated the stove in each instance for twenty-four hours without disturbing the fire in any manner further than would occur from filling up the magazine with coal during such an interval. The first experiment was made with a grated fire pot like that shown in Complainants' Exhibit No. 8 (Fort Orange stove). The draft used was made with both the revertible and direct draft, the full
545 capacity of the draft damper being opened in each instance. The coal used was Lackawanna, chestnut size. The second experiment was made with a fire pot of the same size and area before tried, with the exception that in the latter case the grated apertures were continued upward to within an inch and a half of the fire pot. When I speak of using a revertible and direct draft for twenty-four hours I mean I tried each twenty-four hours. The results of these experiments resulted in my finding that the stoves operated with the two fire pots that I have named burned the fuel equally well with either, and I could not distinguish that there was any different results produced in the one that was not found in the other. I found that the fire pot which was nearly all grated upon its sides burned the fuel as well in the same manner as did the fire pot which was only partly grated, and I could not distinguish any different operations between the two in that respect.

4 Q. So far as you could ascertain, was the combustion of the coal as complete and efficient in the fire pot that was wholly grated as in the one that was partially grated?

A. I think it was as perfect in one as in the other; I could not distinguish there was any difference in the operation of the two.

5 Q. Mr. Selkirk in his first examination said something about the fuel in a wholly grated fire pot deadening down and finally giving out on account of the admission of air at the top of the slots and over the surface of the fuel. Did you observe any tendency in the fire to go out after having been used twenty-four hours or more without disturbance when the wholly-grated fire pot was used?

A. I did not any more than when the other partially-grated fire pot was used. The appearance of each was the same in both cases when the fire was used twenty-four hours.

546 6 Q. After the wholly-grated fire pot had been run twenty-four hours without disturbance, what was the condition of the fuel at or near the top of the fire pot?

A. It was on fire from the outer rim of the coal to the centre on the top, and the lower part of the fire pot contained a zone of ashes and cinder which was not ignited which was about the same in both cases.

7 Q. The Fort Orange stove is a magazine stove, is it not?

A. It is.

8 Q. In a magazine stove, as ordinarily used, how is the coal supplied to the fire pot?

A. It is fed to the central part of the fire pot and spreads out towards the sides in its descent so as to form a conical pile between the bottom of the magazine and the outer edge of the fire pot. As the coal burns out below fresh coal descends from the magazine to keep the surface of the fire in about the same position as I have before described, to wit, a conical pile.

9 Q. Then in a magazine stove, as ordinarily used, the fire pot is kept "heaping" full and the top of the heap is within the mouth of the magazine?

A. It is.

Counsel for defendant offers the fire pot referred to by the witness in evidence and requests the examiner to mark the same "Defendant's Exhibit Fort Orange Grated Fire Pot."

Exhibit so marked.

Cross-examination by Mr. SELKIRK:

10 X Q. Did you experiment with "Defendant's Exhibit Fort Orange Grated Fire Pot" without employing the fuel magazine for supplying fuel to it?

A. I did not.

11 X Q. In kindling the fire did you supply the fuel from
547 the magazine in a constant manner, so that the same height of fuel would be maintained in the fire pot as the kindlings were being burned away?

A. The kindlings were ignited and coal was poured on them through the magazine, so as to cover the kindlings and partly fill the magazine; as soon as the lower coal was ignited (which was in about twenty minutes) the magazine was filled up; under which conditions I should answer the question affirmatively.

12 X Q. Did you at any time experiment with that stove with the fuel an inch below the plane of the fire pot?

A. I don't think I made any experiments with the coal in that condition; I came in one day and found the fire below the top of the slots and the magazine empty.

13 X Q. How did the quantity of fuel burned with the Fort Orange grated fire pot compare with that burned in the partly-grated fire pot in the same time?

A. I did not weigh the fuel; my impression is there was very little difference.

14 X Q. Will ash form in the burning of hard coal where the air or oxygen does not come in contact with the burning coal?

A. It will not. Ashes being the product of combustion they cannot be there without combustion, and there can be no combustion of coal without air.

15 X Q. In what portion of the fire pot will ash form?

A. Ash forms wherever combustion is produced; it is the residuum of coal, commonly found in all parts of the fire pot where coal is being burned.

16 X Q. Does the presence of ash in a fire pot indicate that air has been brought in contact with the fuel burning that shows ash?

A. It indicates that air has been brought in contact with some fuel, and may have come from the result of burning the fuel which shows its presence or some other fuel above it.

548 17 X Q. Please examine the top surface of the fire in the experimental stove——

In consequence of Mr. Hagan being called from the city the further cross-examination was suspended.

Counsel for defendant offers in evidence a certified copy of the model filed by Zebulon Hunt in the Patent Office of the United States, with his application, upon which was granted letters patent to said Zebulon Hunt, dated June 14th, 1864, No. 43155, and requests the examiner to mark the same "Defendant's Exhibit Certified Copy of Hunt's Model of 1864 Stove."

Also a certified copy of the file wrapper and contents of the application of Zebulon Hunt for letters patent No. 43155, dated June 14th, 1864, for improvements in reservoir stoves, and requests the examiner to mark the same "Defendant's Exhibit Hunt File Wrapper and Contents."

Exhibits so marked.

Adjourned to meet on notice to complainants' counsel.

549 TROY, N. Y., THURSDAY, *June 1st*, 1882.

Pursuant to notice the examination was resumed at 10 o'clock a. m., at the office of W. E. Hagan, 259 River street, Troy, N. Y.

Present: T. G. Younglove, for complainants; Esek Cowen, for defendant.

Cross-examination of W. E. HAGAN concluded by Mr. SELKIRK:

18 X Q. While propounding to you the question commenced just before the adjournment of the last hearing you were suddenly called to leave the city on account of the severe illness of your father, and the examination was necessarily adjourned. In that question it was intended to call your attention to the fact that there was quite a large accumulation of ashes on the top surface of the burning fuel in the experimental stove having the grated Fort Orange fire pot, and it was intended to ask you for an explanation as to what was the cause of this accumulation of ashes on the top surface of the burning fuel. Will you please explain why ashes formed and accumulated on the top surface of the fire in your experimental stove?

A. If coal was pure carbon there would be no ashes formed in its combustion; but the fact that it is combined with silica and silicious compounds, when the carbon is burned by its union with oxygen, the silica and its associates are left unconsumed to produce what is denominated ash. I account for the ashes as appearing on the

top surface of the fire, as stated in the question, that they had
550 been produced in the ordinary manner by the combustion of coal, as I have stated, and that no effort had been made to dislodge them or cause them to descend by the ordinary operation of shaking the fuel.

19 X Q. Does not the presence of a large amount of ashes on the top surface of the burning fuel indicate that currents of air had moved over the top surface of the same?

A. It does not, for those indications would be produced by the air passing through the coal, assuming the coal to be in a state of combustion, as I assume the interrogator means. I don't wish to be understood as saying, however, but that small quantities of air could be admitted to the top of the burning fuel and produce the appearance named in the question to a small extent.

20 X Q. Is it not true that there is always a considerable amount of ashes formed on the top surface of the burning fuel in open fireplace grates when they are run for several hours without disturbance of the fuel?

A. It is. There cannot be combustion of coal without producing ash, as coal is naturally formed.

21 X Q. Will you please explain why it is that in first-class stoves having their combustion chamber walls practically air-tight that the top surface of the burning fuel is clear and generally free from accumulation of ash, while the surface of the fire in the vertical slots of the fire pot become covered to such an extent as to almost hide from view the fire facing those slots after the fire has been burning for a short time, say one hour or longer?

A. The question assumes that the top of the coal is always bright in a practically air-tight combustion chamber, which, in my experience, is not the case. The coal of the surface of the fire obeys the same laws as to the production of ash as it would in an open fire if undisturbed. The reason why the grated apertures in an open
551 fire pot become more or less obstructed by ashes is that they descend to that point by gravity from the coal consumed above and there more or less accumulated; the passing currents of air liberate them to a certain extent as they are produced and they fall by gravity.

I answer this question with relation to that part of the appearance of the grated fire pot produced by ashes and which presents a dull appearance at times manifested there.

22 X Q. Is it not true that when the door or doors of the combustion-chamber section are slightly opened so as to admit the passage of air over the top surface of the fire that ashes will accumulate on the top of the same to a large extent?

A. It is so to a considerable extent.

23 X Q. Do ashes form on the top surface of the fire when all the oxygen of the air has been taken up by the carbon in the fuel before it reaches the top surface of the same in its upward passage; I mean to such an extent as to cause the top surface of the fire to have a dull appearance?

A. No, sir; no ashes are produced on the top surface of the fire,

unless combustion takes place, to any extent. The conditions assumed in the question would be those produced by distillation of the coal and the liberation of its more volatile portions; but the coke produced as a sequence of this, though it might have a dull appearance, would not be from the presence of ashes to any extent.

24 X Q. In your opinion would the burning of the fuel have been as good in your experimental stove with "Defendant's Exhibit Fort Orange Grated Fire Pot" without the use of a fuel magazine to supply coal to the fire continuously to replace the fuel being consumed as it would when supplied with fuel from the magazine?

552 A. I do not think that any ordinary surface-burner could be used in which a continuous supply of fuel could be had so well without a magazine as with one, nor could any as regular supply be made to a surface-burning stove as could be had with one having a magazine. This rule would apply as well to the Fort Orange stove as any other stove. Hence I answer that I do not think it would.

25 X Q. The question did not refer to the supply of fuel in a regular manner, but to the combustion of the fuel without the use of a magazine in the experimental stove. Would the combustion be as good as compared with that had in the fire pot of defendant's stove Fort Orange (Complainants' Exhibit No. 8) or a stove having a solid fire pot, say, six inches in depth, in both cases without fuel magazines?

A. In my opinion the grated fire pot is no improvement whatever as compared with a solid fire pot, each having an anti-clinker opening at the bottom, and I mean a fire pot wholly or partially grated, as we have discussed it in this comparison; but I am willing to admit that a grated fire pot in the Fort Orange stove will burn better with a magazine than without one.

26 X Q. The question called for a comparison of the quality of the fire in stoves having the fire pots mentioned. Will you now please answer the question?

A. I submit that I have, and it is the best answer I can give to the question, for I have already stated that "I am willing to admit that a grated fire pot in the Fort Orange stove will burn better with a magazine than without one."

27 X Q. Why will a solid fire pot of a depth, say, of six or six and a half inches operate better than a grated one—wholly grated I mean—of the same depth?

A. Because in a fire pot of that depth all the air that could
553 be utilized to burn the coal contained therein could reach the fire through the anti-clinker opening and the grated bottom. Increasing the grated area of the sides of the fire pot only tends to increase the escape and waste of unconsumed coal. I am not prepared to say, however, that in burning bituminous coal the fire pot having grated sides might not be an advantage. In devices calculated to burn coal and produce the highest heat, like assaying furnaces, the side admission of air is always avoided.

28 X Q. For what purpose is the side admission of air always avoided in assaying furnaces?

A. To compel the air entering the fire to pass up through the fuel.

29 X Q. State how the air is utilized to any greater extent with a solid fire pot to burn the coal contained therein than a fire pot wholly grated in its vertical sides?

A. The draft current is more concentrated and acts more directly on the fuel. Another reason is this, that the point at which the air enters the fire is more or less cooled by parting with its heat to heat the air. Increasing this grate surface by grating the sides of the fire pot adds to this chilling area, and is, so far, a detriment as compared to using a solid fire pot.

30 X Q. If a solid fire pot was slotted upward from the grated bottom to the distance of one inch and a half would such slottings materially affect the operation of the fire pot from what they were before the slotting was made, the depth being six and a half inches to the bottom of the grate?

A. I think, as I have before stated, a slotted fire pot would be a detriment in any way, and for the reasons before given, excepting for burning bituminous coal, as I have before stated.

31 X Q. As stoves are now and have been constructed by the trade generally for the last twelve or fifteen years were they not
554 intended to produce the greatest heat in the mass of burning fuel at or near the top surface of the same instead of at the sides of the fire pot lower down (and which are enclosed by the outer wall of the stove), so as to more highly heat the walls of the combustion chamber and the escaping products passing from the top surface of the fire?

A. I am hardly able to tell what other people's intentions are. My best understanding is that the modern stoves alluded to in the question were constructed with grated sides in the fire pot to give them the appearance of an open fire, and in which economy and useful features were sacrificed for ornamental, and for the same reason that mica windows have been added to a stove opposite the grated sides of a fire pot, which performed no useful function whatever, no more than the nickle ornaments on the stove; and in these additions to the moden stove I don't think practically economy or the condition of combustion named in the question have been considered at all.

32 X Q. I did not ask for a dissertation on the subject of the use of mica lights or ornamentations in a stove, but for your opinion as to whether or not the stoves as constructed the last twelve or fifteen years were not intended, by reason of their mode of construction, to cause the fire at or about the top surface of the fuel to be hotter than at the sides of the fire pot lower down, so that the products of combustion would be of higher temperature and that the walls of the combustion chamber would become more highly heated for heating purposes?

A. If the interrogator will ask me what the effect of such a construction will be, and not what the intentions of the makers were, I can answer him more directly; but when he asks me what others intended them for I must answer him as I did in the last answer, including the dissertation on ornamentation, as that is one of the features the construction of the stove was intended for.

555 33 X Q. The question did not have reference to the intention of manufacturers, but the intention arising from the construction of the stoves named. With this explanation please answer the question.

A. I make the same answer that I have before, with this explanation, that whether the results named (that is, the greater combustion in the combustion chamber) was a sequence of the intention to ornament, as I have stated, or not, I don't know. I cannot tell what people's intentions are. It may have been a sequence of the intention (which I think it was), so far as I am able to tell. As I have before stated, if the interrogator wishes to know what the effect of such a construction would be I can answer.

34 X Q. What has been the effect of the construction of stoves as generally made for the last twelve years and most popular with the public in respect to the combustion of the fuel and efficiency of stoves for warming apartments.

A. I am unable to state whether the public have taken into account the economy of fuel or not. My own impression is that the question of economy of fuel in the modern stove having grated fire pots has been sacrificed, more or less, to produce ornamental effect. Now, whether the public have considered the economy in the combustion of fuel or the ornamentation of the stove in which the former is sacrificed for the latter, as establishing the popularity of the modern stove, I am unable to say.

35 X Q. The question had no reference to the matter of economy of burning fuel, as it is well known that the more rapid the combustion and higher the temperature of the burning fuel and its products the more extravagant will be the consumption of the fuel. The question had reference to the combustion of the fuel and the efficiency of the stoves named. Will you please make your answer in reference to these matters last mentioned?

556 A. I make the same answer that I did before, erasing the words "that the economy of fuel" and substituting therefor the words "the combustion of the fuel and efficiency of the stoves."

36 X Q. Do you intend to be understood that heating stoves as constructed since 1870 have been of such character as to burn the fuel near its surface less rapid and to less highly heat the combustion chamber walls and the products escaping from the top surface of the fuel, and the stoves have been less efficient than those of older constructions?

A. In my opinion the fact of grating the fire pot in the modern stove occasions a waste of coal, as I have before stated and explained, and probably heats the combustion chamber more in proportion by rapid combustion therein than the older ones.

37 X Q. How is the more rapid combustion obtained in the present stoves as compared with that in the older stoves?

A. By making the larger part of the combustion in the combustion chamber instead of in the fire pot.

38 X Q. Will you state what is the depth of the flange ring of the Fort Orange grated fire pot (defendant's exhibit) from the plane of

its extreme upper edge to the plane of the upper end of the slots at which the said ring terminates?

Recess until 2 o'clock.

557 *Afternoon Session.*

A. To question 38. It measures one and five-eighth inches from the inner upper rim of the fire pot in a straight line down to the top of the slot; it measures two inches from the outer rim of the fire pot down to the top of the slots in a slanting direction.

39 X Q. What is the depth of the fire pot?

A. Six inches and a half.

40 X Q. Suppose in that experimental stove the vertical bars were removed at the termination of the slots and a grate bottom was set up to the same; what change of operation, if any, would be had in the burning of fuel in such a changed condition?

A. I never tried a fire pot in diameter of the size of this one and having a depth of little over one and one-half inches. I never heard of such an experiment. If combustion could be maintained at all in such a concordance practically to my mind it is a question.

41 X Q. Why do you believe that combustion could not be maintained in such a fire pot under the conditions named in the last question?

A. I assume the question to refer to such fuel as is ordinarily burned in such stoves. There would be too little coal for any practical purpose, and I have before answered to this same hypothesis as well as I am capable of answering on my former cross-examination.

42 X Q. Could combustion be maintained in the Fort Orange stove (Complainants' Exhibit No. 8) with the bars of its fire pot removed and the grate set up to the lower end of the solid portion of the fire pot which would give a depth of three or three and one-half inches?

558 A. I think combustion could be maintained in the Fort Orange stove with the fire pot that depth.

43 X Q. With such a change and the grate bottom cleared of ashes and the fire pot kept filled will not the fuel burn with rapid combustion?

A. It would with a full draft.

Redirect examination by Mr. COWEN:

44 R. D. Q. How long did you continually operate the Fort Orange stove with the experimental fire pot that you have described by keeping the magazine supplied with coal?

A. From about the 20th of March until we ceased making fires, in the latter part of April.

45 R. D. Q. During all that time did you notice that the combustion or the heat given out was any less than in the same stove with

the partially-grated fire pot, like that in the Complainants' Exhibit No. 8?

A. I did not notice that there was any difference between the two.

WILLIAM E. HAGAN.

Subscribed and sworn to before me this 1st day of June, A. D. 1882.

RICHARD P. DUMARY,
Special Examiner.

Testimony closed.

559 STATE OF NEW YORK, } ss:
County of Albany, }

I, Richard P. Dumary, of the city and county of Albany, in the State of New York, as special examiner by consent, under and pursuant to the 67th rule of equity (as amended), do hereby certify as follows:

That Gurdon G. Wolfe, William Hagan, and Zebulon Hunt were each, at the times and places mentioned in their depositions, carefully examined, cautioned, and sworn to testify the truth, the whole truth, and nothing but the truth; that their depositions were reduced by me to writing in their presence; that each of them subscribed to the same in my presence; that I am not counsel or attorney for either of the parties to this cause and am not in any manner interested in the event of this cause.

I further certify that I have compared the foregoing printed depositions with the original depositions of the said witnesses, and that the same are in all respects true copies of said original depositions and of every part thereof.

The said original depositions, together with all exhibits filed by the company defendant in this cause, are herewith returned to the honorable the circuit court of the United States of the northern district of New York.

In testimony whereof I have hereunto set my hand and seal this first day of June, A. D. 1882.

RICHARD P. DUMARY,
Special Examiner by Consent.

560 U. S. Circuit Court, North. Dist. of New York. In Equity.

WILLIAM HAILES *et als. vs.* ALBANY STOVE CO.

It is hereby stipulated and agreed by and between the respective parties that the annexed copy of disclaimer may be filed with the clerk of this court as and for the certified copy of the disclaimer which was introduced in proof herein and used on the argument of this cause at the final hearing before the Hon. William J. Wallace, circuit judge.

EARL L. STIMSON,
Sol'r for Comp't,
By A. J. TODD, *of Counsel.*

(S'd) ESEK COWEN.

561 To the Commissioner of Patents:

Your petitioners, William Hailes, James Gray, and Charles Selkirk, citizens of the United States, all residing at Albany, in the State of New York, represent that in the matter of certain improvements in coal stoves, for which letters patent of the United States No. 51085 were granted Lewis Rathbone and William Hailes on the 21st day of November, 1865, they are the sole owners by virtue of the following assignments, namely: William Hailes to James Gray, September 26th, 1879, recorded September 29th, 1879, Liber R 24, p. 107; Lewis Rathbone to Rathbone, Sard & Co., July 6th, 1880, recorded February 14, 1881, Liber L 26, p. 91; Rathbone, Sard & Co. to James Gray and Alexander Selkirk, October 17, 1880, recorded February 14, 1881, Liber L 26, p. 93; Alexander Selkirk to Charles Selkirk, February 12, 1881, recorded February 14, 1881, Liber L 26, p. 96; James Gray to William Hailes, February 12, 1881, recorded February 14, 1881, Liber L 26, p. 95, and that they have reason to believe that through inadvertence, accident, or mistake the specification and claims of said letters patent are too broad, including that of which said patentees were not the first inventors.

Your petitioners therefore hereby enter their disclaimer to so much of the first claim as covers perforations or openings in the sides of a suspended fire pot extending throughout the entire depth of sides and limiting such perforations or openings to substantially the lower half of the fire pot, the material or substantial part of the thing patented in and by said claim not hereby disclaimed being as follows:

562 A fire pot suspended from its upper edge with substantially the upper half of its sides made solid and substantially the lower half of its sides containing perforations or openings.

Filed October 30th, 1882.

563 United States Circuit Court, Northern District of New York.

WILLIAM HAILES *et al. against* ALBANY STOVE COMPANY.

WALLACE, *J.:*

The letters patent upon which this action is founded were granted to Lewis Rathbone and William Hailes November 21st, 1865, and are for an improvement in coal stoves. The claim involved here is as follows: "Arranging a perforated fire pot with a grate bottom within a circular stove having provision for the admission of air below the point of suspension of said fire pot, substantially as described."

In view of the prior state of the art, and especially in view of the letters patent granted to Zebulon Hunt June 14th, 1864, if the patentees invented anything new it consisted in a perforated fire pot for a stove which required that the upper half of the wall of the fire pot should be solid, and the lower half perforated with vertical slots or openings in order to perform the peculiar function assigned to it in the combination of which it was a part. The complainants'

expert concedes that, in order to do the work required of the fire pot, the vertical slots or openings must extend substantially from the bottom of the fire pot half way up to the top of the wall, and must
564 not extend substantially any higher. It is not necessary to consider the special advantages of this feature of the device or to discuss the question whether, practically, it adds to the efficiency of the stove or alone or in combination with the other parts accomplishes a new result, because there is not a hint in the description of the invention or in the claim of any purpose or function for which this peculiar adjustment of perforations and solid wall is advantageous. The patent does not point out the length or width of the vertical openings, the size of the perforations, or the necessity or propriety of confining them to the lower half of the wall of the fire pot or the necessity or propriety of a solid wall for the upper half. The only definite allusion in the patent to the character of the perforations is found in that part of the general statement of the object of the invention, which speaks of obtaining more perfect combustion by admitting air "through the sides of a suspended fire pot at all points," and in that part of the specification which describes the fire pot as extending from the enlarged fire chamber C down into the air chamber B, and "made with vertical openings through its sides for the admission of air into the body of coal within it." Reading the entire description the conclusion is irresistible that the patentees never conceived that any such peculiar adjustment of the perforations and solid wall was of the slightest importance in their invention. Certainly there is no description which would enable the public to comprehend that the claim was pretended to be for a combination in which the fire pot should preserve these distinct char-
565 acteristics of the perforations and the solid wall, or to enable any person skilled in the art to which it appertains to make a fire pot such as is required. No person could ascertain without experiment that the operation of a fire pot in which the upper half of the wall is solid is different from one in which only a quarter of the wall is solid, and there is nothing in the patent to indicate the necessity of any adjustment between the location and proportion of the solid wall and that of the perforated surface. A fire pot answering the specification is shown in the patent to Zebulon Hunt, and it is conceded that that patent anticipates the complainants' patent, unless the latter is saved because the vertical openings in Hunt's fire pot extend nearly to the top of the fire pot from the grate instead of ending about half way up.

It is true that the drawings of the complainants' patent show a fire pot in which the vertical openings extend from the grate only about half way towards the top, but as no one would infer from anything contained in the description or claim that this is an essential or important feature of the fire pot, it could not be supposed that the patentees intended to limit themselves to a fire pot having that peculiar feature.

The complainants have endeavored to escape defeat by filing a disclaimer since this suit was brought. They disclaim "so much of the claim as covers perforations or openings in the sides of a sus-

pended fire pot extending throughout the entire depth of its sides, and they limit such perforations or openings to substantially
566 the lower half of the fire pot," and they claim "a fire pot suspended from its upper edge with substantially the upper half of its sides made solid and substantially the lower half of its sides containing perforations or openings." This disclaimer was not filed until within a few months of the expiration of the term of the patent.

But, assuming there has been no unreasonable delay or neglect in filing the disclaimer, it cannot avail here. If it is true that the patentees defectively or insufficiently described the invention and claimed more than they had a right to claim as new, they were entitled to a reissue of their patent upon surrender of the original.; but it is not the office of a disclaimer to reform or alter the description of the invention. If a patentee has claimed more than that of which he was the inventor his patent may be valid for all that part which is justly and truly his own, and he may recover upon his patent if the part which is his own be definitely distinguishable from the parts claimed without right; but in such case he cannot recover costs unless a disclaimer has been entered before suit commenced. When there are several claims, some of which he is entitled to and others of which he is not entitled to, the part of the invention which is his own may be definitely distinguishable from that which is not his own and a disclaimer before suit brought will put him right and enable him to recover upon his patent as though it had originally been confined to the proper claims; and there would seem to be no objection in such a case to eliminating, by his disclaimer, such parts of the description as re-
late to the claims to which he is not entitled and which
567 he abandons. This, however, is a very different thing from converting a claim for one thing into a claim for something else and amending the description to effectuate the claim. This might give the patentee a new patent; it certainly would enable him to grant himself a reissue without the concurrence of the Commissioner of Patents. It would enable him, after others had occupied the field of invention, and by their intellect and experiments discovered what he had never pointed out or claimed, except, perhaps, so vaguely that his information was valueless, to deprive them of the fruit of their efforts. When there are distinct claims in the patent, some of which are valid and others not, or where there is a single claim, but a specification by which the public can definitely distinguish what is new and belongs to the patentee and what does not really belong to him, although he had claimed it, a disclaimer will right the patentee's mistake and will work no injustice to others.

This is not such a case. There was nothing in the description or claim of the complainants' patent to indicate to the defendant or to the public that they were appropriating anything of which the patentees were the inventors. They had a right to suppose that they were laboring in a new field of invention.

The bill is dismissed.

A. J. Todd, for the complainants; Esek Cowan, for the defendant.

568 U. S. Circuit Court, North. Dist. of New York. In Equity.

WILLIAM HAILES *et al.* vs. ALBANY STOVE CO.

SIR: Please take notice that I shall apply to the Hon. William J. Wallace, circuit judge, at the regular term of this court, to be held in the city of Utica, commencing on the third Tuesday of March, 1883, as soon after the opening of said court as the circuit judge announces to counsel by telegraph he can hear the same, for leave to reargue the cause on the question of the sufficiency of the disclaimer in view of the points made respecting the same by the circuit judge in his opinion filed on dismissing the complaint herein.

Yours, &c., A. J. TODD,
Counsel for Compl'ts.

Dated March 7, 1883.
To Esek Cowen, Esq., of counsel for defendant.

(Endorsed:) "Notice of motion for leave to reargue." Filed Sept 22, 1884.

569 Supreme Court of the United States.

WILLIAM HAILES, JAMES GRAY, and CHARLES SELKIRK, Appellants,

vs.

THE ALBANY STOVE CO., Appellee.

To the honorable the Supreme Court of the United States:

The appeal of William Hailes, James Gray, and Charles Selkirk, the above-named complainants and appellants, respectfully showeth—

That upon the 9th day of May, 1881, these complainants above named filed their bill in the circuit court of the United States for the northern district of New York against the above-named defendant, alleging that the defendant did infringe certain letters patent which were issued to Lewis Rathbone and William Hailes on the 21st day of November, 1865, for certain new and useful improvements in stoves, and numbered 51085, and of which the said complainants were the sole and exclusive owners; the said bill showing the issue of said letters patent, and the exclusive right and title of the said complainants in and to the same, and charging the defendant with infringement thereof by unlawfully and wrongfully making, using, and vending stoves made according to the said invention and letters patent of the complainants; the said bill further praying that the defendant be restrained and enjoined from such alleged infringe-

570 ments, and from using and selling such stoves, and be compelled to account for and pay the complainants the gains and profits received by it, the defendant, from such alleged infringements and damages which the complainants sustained; and the said defendant made answer thereto, filed August 17, 1881, denying that the said Lewis Rathbone and William Hailes were the first and original inventors of the said improvements claimed in said

letters patent, and averring that the said improvements were well known and in public use in the United States before the said Rathbone and Hailes invented the same; and the complainants filed their replication to said answer on the 5th day of September, 1881, and both parties took proofs in said cause; that the complainants filed a disclaimer to a certain part of said letters patent, and the said cause was brought on for final hearing before the court in the term of March, 1883, upon the pleadings and proofs therein and said disclaimer; whereupon the said court, on such hearing, decided that the said letters patent numbered 51085 were not valid and that the bill of complaint must be dismissed with costs, and that on the 20th day of March, 1883, a final decree was made and pronounced in the cause, wherein it was in substance adjudged and decreed that the complainants' bill be dismissed, and that the complainants, these appellants, pay the costs.

Therefore these appellants appeal from the said final decree of the said circuit court of the United States, and respectfully pray that the decree of the said circuit court and the bill, answer, pleadings, depositions, evidence, and proceedings in the said cause may be sent to the Supreme Court of the United States without delay, and that the said Supreme Court may proceed to hear the said cause anew,
571 and that the said decree dismissing complainants' bill with costs may be reversed and a decree made as prayed for in said bill, with such other decree as to the said Supreme Court shall seem just.

Dated New York, N. Y., March 29, 1884.

A. J. TODD,
Of Counsel for Complainants and Appellants.

The foregoing appeal is allowed.
April 2, 1884.

WM. J. WALLACE,
Circuit Judge.

(Indorsed:) Petition for appeal from the decree dismissing complainants' bill with costs. Service of a copy of within petition, &c., hereby admitted this 1st day of July, 1884. Esek Cowen, sol'r for def't. Filed Sep. 22, 1884. Wm. S. Doolittle, clerk.

572 Know all men by these presents that we, Peter Kinnear, brass founder, of Albany, New York, and Francis Selkirk, farmer, of Bethlehem, in the county of Albany and State of New York, are jointly and severally held and firmly bound unto the Albany Stove Co., a corporation created under the laws of the State of New York and located in the city of Albany, in said State of New York, in the sum of thirteen hundred dollars ($1,300.00), to be paid to the said Albany Stove Co. or its assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, by these presents.

Sealed with our seals and dated the 20th day of November, 1883.

Whereas at a circuit court of the United States within and for the northern district of New York, in a suit in equity pending in said

court between William Hailes, James Gray, and Charles Selkirk, complainants, and The Albany Stove Co., defendant, a decree was rendered against the said complainants, and the said complainants having obtained an appeal to remove the said cause to the Supreme Court of the United States to reverse the decree in the aforesaid suit, and a citation, directed to the said Albany Stove Co., citing and admonishing it to be and appear at the October term, 1883, of the Supreme Court of the United States to be held at Washington:

Now, therefore, the condition of the above obligation is such that if the said William Hailes, James Gray, and Charles Selkirk
573 shall prosecute their said appeal to effect and answer all damages and costs if they fail to make their plea good, then the above obligation to be null and void; otherwise to remain in full force and virtue.

PETER KINNEAR. [SEAL.]
FRANCIS SELKIRK. [SEAL.]

In the presence of—
ALEXANDER SELKIRK.

On the 20th day of November, 1883, before me personally came Peter Kinnear, to me known and known to me to be the individual described in and who executed the foregoing bond, and he acknowledged that he executed the same.

[L. S.] ALEXANDER SELKIRK,
Notary Public.

On the 20th day of November, 1883, before me personally came Peter Kinnear, to me known, and, being by me duly sworn, did depose and say that he resides at the city of Albany, in the State of New York; that he is worth the sum of thirteen hundred dollars and upwards besides property exempt by law from execution and over and above all his debts and liabilities, and is a freeholder in the State of New York.

[L. S.] ALEX. SELKIRK,
Notary Public in and for the County of Albany, N. Y.

On the 20th day of November, 1883, before me personally came Francis Selkirk, to me known and known to me to be the individual described in and who executed the foregoing bond, and he acknowledged that he executed the same.

[L. S.] ALEXANDER SELKIRK,
Notary Public in and for the County of Albany, N. Y.

574 On the 20th day of November, 1883, before me personally came Francis Selkirk, to me known, and, being by me duly sworn, did depose and say that he resides at Bethlehem, Albany county, in the State of New York; that he is worth the sum of thirteen hundred dollars and upwards besides property exempt by law

from execution and over and above all his debts and liabilities, and is a freeholder in the State of New York.

[L. S.] ALEXANDER SELKIRK,
Notary Public in and for the County of Albany, N. Y.

The foregoing bond is approved this 14th day of January, 1884.
WM. J. WALLACE.

(Indorsed:) Bond on appeal to the Supreme Court of the United States. Filed Jan. 19, 1884. Wm. S. Doolittle, clerk.

575 By the Hon. William J. Wallace, one of the judges of the circuit court of the United States for the northern district of New York.

To the Albany Stove Co.:

Whereas William Hailes, James Gray, and Charles Selkirk have lately appealed to the Supreme Court of the United States from a decree lately rendered in the circuit court of the United States for the northern district of New York, made in favor of you, the said The Albany Stove Co., and have filed the security required by law: You are, therefore, hereby cited to appear before the said Supreme Court, at the city of Washington, on the second Monday of October, 1884, to do and receive what may appertain to justice to be done in the premises.

Given under my hand, at the city of Syracuse, in the north-
576 ern district of New York, in the second circuit, the 2nd day of April, in the year of our Lord one thousand eight hundred and eighty-four.

WM. J. WALLACE,
Circuit Judge.

Service of a copy of within citation hereby admitted this 1st day of July, 1884.

ESEK COWEN,
Sol'r for Def't.

[Endorsed:] U. S. circuit court, northern district of N. Y. In equity. William Hailes *et als. vs.* The Albany Stove Co. Citation on appeal to the Supreme Court of the United States. A. J. Todd, counsel for compl'ts and appellants, 261 Broadway, N. Y.

[Stamped:] U. S. circuit court, N. D. of N. Y. Filed Sep. 22, 1884. W. S. Doolittle, clerk.

577 UNITED STATES OF AMERICA, } ss:
Northern District of New York, }

I, William S Doolittle, clerk of the circuit court of the United States of America for the northern district of New York, in the second circuit, do hereby certify that the foregoing pages, numbered from 1 to 575, inclusive, contain a true and complete transcript of the record and proceedings had in said court in the case of William

Hailes, James Gray, and Charles Selkirk *vs.* Albany Stove Company as the same remain of record and on file in said office.

In testimony whereof I have caused the seal of the said court to be hereunto affixed, at the city of Utica, in the northern district of New York, in the second circuit, this 1st day of October, in the year of our Lord one thousand eight hundred and eighty-four, and of the Independence of the said United States the one hundred and ninth.

[Seal of the U. S. Circuit Court, Northern District N. Y.]

W. S. DOOLITTLE, *Clerk.*

578 Supreme Court of the United States. In Equity.

WILLIAM HAILES and Others

ag'st

THE ALBANY STOVE COMPANY.

It is hereby stipulated and agreed that title to the letters patent, Complainants' Exhibit No. 1, is exclusively in the complainants.

It is further stipulated that the stove, "Complainants' Exhibit Defendant's Stove No. 8," was sold by defendant between the 21st day of November, 1865, and the date of the commencement of this suit.

ESEK COWEN,
Solicitor for Defendant.
A. J. TODD,
Sol'r for Complainant- & of Counsel.

579 [Endorsed:] Supreme Court U. S. 1887. October term. No. 79. Wm. Hailes *et al.*, app'ts, *vs.* The Albany Stove Co. Stipulation in regard to exhibits.

[Stamped:] Office Supreme Court U. S. Filed Sep. 24, 1887. James H. McKenney, clerk.

580 Supreme Court of the United States. In Equity.

WILLIAM HAILES and Others

ag'st

THE ALBANY STOVE COMPANY.

It is hereby stipulated by and between the parties to this appeal that the record in this case to be made up for the Supreme Court of the United States be amended as follows:

The complainants' record by striking out—that is to say, that under sec. 9 of rule 10 the following may be omitted in the printing of the record:

1st. The stipulation and notice on pages 15 and 16.

2nd. The deposition of George Baker, commencing on page 27.

3rd. Cross-examination of witness, Alexander Selkirk, commencing on page 28 and ending on page 35.

4th. The deposition of Joseph M. Northrup, commencing on page 36 and ending on page 51.

5th. Deposition of Josiah P. Eldredge, commencing on page 83 and ending on page 88; also cross-examination of same witness, commencing on page 231 and ending on page 233.

6th. Deposition of William Hailes, commencing on page 220 and ending on page 230.

7th. Cross-examination of Alexander Selkirk, commencing on page 141 and ending on page 220, except from X 259, page 202, to end of page 213.

581 8th. Deposition of James Morrison, commencing on page 234 and ending on page 236.

9th. Certified copy of letters patent to Zebulon Hunt, No. 50073, offered in evidence on page 236 of the comp'ts' printed case; also a certified copy of the model of the fire pot of said patent put in evidence at the same time.

10th. Exhibits 2 to 6, inclusive, introduced at pages 18 & 19 comp'ts' record.

It is further stipulated that the defendant's record be amended by striking out the following depositions and exhibits—that is to say, that under sec. 9 of rule 10 the following may be omitted in printing of the record:

1st. Deposition of Wolfe, pages 8 to 17; also cross-examination, pages 178 to 181.

2nd. Cross-examination of William E. Hagen, pages 35 to 177, inclusive; also from pages 182 to 189, inclusive.

3rd. Deposition of witness Hunt, pages 279 to 287, inc.

4th. Defendant's Exhibit Harrison Patent, commencing on page 207.

5th. Defendant's Exhibit Morrison Patent, commencing on page 215.

6th. Defendant's Exhibit Magee Patent, commencing on page 221.

7th. Defendant's Exhibit Treadwell Patent, commencing on page 226.

8th. Defendant's Exhibit Easterly Patent, commencing on page 234.

9th. Defendant's Exhibit Buchanan Patent, commencing on page 248.

10th. Defendant's Exhibit Hewes Patent, commencing
582 on page 253.

11th. Defendant's Exhibit Schmedinghoff Patent, commencing on page 259.

12th. Defendant's Exhibit Hunt File Wrapper and Contents, commencing on page 263.

ESEK COWEN,
Solicitor for Defendant.
A. J. TODD,
Solicitor for Comp't- & of Counsel.

583 [Endorsed:] Supreme Court U. S. 1887. October term. No. 79. Wm. Hailes *et al.*, app'ts, *vs.* The Albany Stove Co. Stipulation in regard to printing record.
[Stamped:] Office Supreme Court U. S. Filed Sep. 24, 1887. James H. McKenney, clerk.

Endorsed on cover: N. New York C. C. U. S. No. 79. William Hailes, James Gray, and Charles Selkirk, appellants, *vs.* The Albany Stove Company. Filed October 9, 1884.



10th. Defendant's Exhibit Hewes Patent, commencing
582 on page 253.

11th. Defendant's Exhibit Schmedinghoff Patent, commencing on page 259.

12th. Defendant's Exhibit Hunt File Wrapper and Contents, commencing on page 263.

ESEK COWEN,
Solicitor for Defendant.
A. J. TODD,
Solicitor for Comp't- & of Counsel.

583 [Endorsed:] Supreme Court U. S. 1887. October term. No. 79. Wm. Hailes *et al.*, app'ts, *vs.* The Albany Stove Co. Stipulation in regard to printing record.
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Endorsed on cover: N. New York C. C. U. S. No. 79. William Hailes, James Gray, and Charles Selkirk, appellants, *vs.* The Albany Stove Company. Filed October 9, 1884.

125-5-82

SUPREME COURT OF THE UNITED STATES,

OCTOBER TERM, 1887.

No. 79.

WILLIAM HAILES, JAMES GRAY, AND CHARLES SELKIRK, *Appellants*,

vs.

THE ALBANY STOVE COMPANY.

BRIEF FOR THE APPELLANTS.

ANDREW J. TODD,
Counsel for Appellants,
261 Broadway, New York.

Evening Post Job Print.

United States Supreme Court,

OCTOBER TERM, 1887.—NO. 79.

WILLIAM HAILES, JAMES GRAY AND CHARLES SELKIRK, Appellants, vs. THE ALBANY STOVE COMPANY.	Appeal from the Circuit Court for the Northern District of New York.

BRIEF FOR THE APPELLANTS.

Statement of the Issues.

The bill of complaint is for an injunction and account of profits in the usual form, and charges that the defendant corporation has infringed upon certain Letters Patent granted to Louis Rathbone and William Hailes, November 21, 1865, numbered 51,085.

The charge of the infringement was limited to the first claim of the patent, which claim is as follows, namely:

"Arranging a perforated fire-pot with a grate bottom within a circular stove, having provision for the admission of air below the point of suspension of said fire-pot, substantially as described."

The charge of infringement was denied by the answer filed in the case, and at the hearing was urged, in view of the construction contended for by the defendant's counsel of said first claim; but such construction of the claim was not accepted by the Court, as it decided the suit against appellants upon other grounds.

The validity of said first claim was attacked by the setting up of certain prior patents, the most important of which are the following: United States patent granted to Zebulon Hunt, No. 43,155, June 14, 1864; English patent granted to Robert Russell, No 113, January 13, 1857.

A disclaimer was filed (Record, p. 115) during the progress of the suit which limited the scope of said first claim, so that the claim was saved, in view of the state of the art as presented in the proofs; the learned Court below held, however, that the disclaimer could not avail the appellants because the specification and claim to which the disclaimer was applied did not definitely distinguish from the parts claimed without right the part which was the inventors and which was sought to be saved to them by the disclaimer; that it was converting a claim for one thing into a claim for something else, and amending the specification to effectuate the claim, such being the office of a reissue, and that there was nothing in the description or claim of complainants' patent to indicate to the public that they were appropriating anything of which the patentees were the inventors.

The above are substantially the objections to the disclaimer as contained in the opinion of Judge Wallace (Record, pp. 115–117); and the bill of complaint was dismissed.

A stipulation was entered into between counsel limiting the patents exhibiting the "state of the art" to those of Hunt and Russell above referred to (Record pp. 112–124).

Assignment of Errors.

FIRST.—The Circuit Court erred in holding that the disclaimer cannot avail the appellants in this suit, and that their remedy was by reissue.

SECOND.—The Circuit Court erred in holding that there was nothing in the description or claim of the appellants' patent to indicate to the defendant or to the public that they were appropriating anything of which the patentees were the inventors.

I.

THE INVENTION OF RATHBONE AND HAILES.

The specification annexed to the patent as issued (Rec., p. 77) is the same specification that was filed on the application for the patent (Rec., p. 102), except that the third and fourth claims of the latter specification are found to have been erased (Rec., p. 104).

The language of the specification which should have been modified at the erasure of the last two claims so as to apply to but two—the first two claims—was left in its original condition at the grant of the patent.

It would therefore appear that there were four different subject matters sought to be protected originally under said specification; and but one, namely, that which is the subject matter of the *first* claim is here sought to be sustained; and such will therefore only be considered.

The specification says:

"Such stoves (old form or "cylinder") have generally been constructed with a contracted outlet, and also with provision for admitting air above the fire. This we desire to obviate as we have found that a much more perfect combustion can be maintained by enlarging the outlet for the smoke and admitting air through the sides of a suspended fire pot at all points, and thus facilitating combustion by supplying oxygen to the burning coals beneath the surface of the pot as will be hereinafter described."

The fact is bunglingly expressed, but the inventors mean as follows by such language:

That air has been heretofore used in stoves to consume the gases by passing it in at two points, namely, over the top of the fire surface in the combustion chamber, and also up through the grate of a fire pot.

The inventors go on to show by the subsequent language of the specification *taken in connection with the drawings of the patent* just what they proposed to add to these two ways of introducing oxygen of the contained air into the fire pot of such (cylinder) stoves. And the complainants' and defendant's stoves are neither more nor less than cylinder stoves.

They go on to say under the description of the stove by which they illustrate the invention: "Within the body or central portion, *C*, of this stove is an annular flange, *b*, the object of which is to support the fire pot, *G*, by receiving upon it a flange, *c*, that is formed upon the upper edge of said pot as shown in figure 2."

"The fire pot is made of cast iron of a flaring form and of such diameter as to leave a free space, *d*, all around it when arranged within the stove. It extends from the enlarged fire chamber *C*, down into the ash chamber *B*, and it is made with vertical openings through its sides for the admission of air into the body of coal within it."

Then the inventors continue by describing means (provision) for the admission of air below the point of suspension of fire pot (Rec., fol. 250), so that the fire pot can be supplied with air through its vertical openings to the fuel within it.

The *claim* covering the *first subject matter* of this specification is as follows:

"*First.*—Arranging a perforated fire pot with a grate bottom within a circular stove, having provision for the admission of air below the point of suspension of said fire pot substantially as described."

The *second subject matter* of the specification is the annular horizontal register for providing air to the fire pot

below its point of suspension (Rec., p. 79), *and as covered by the second claim of the patent.*

The *third subject matter* of the specification is for making the fire pot and its grate removable from the stove together. (See specification at fol. 249, Rec., p. 78.) "*Another object of our invention is to construct an open circular fire pot which can be applied to or removed from the stove at pleasure*, with a grate in its bottom, &c."

And this *third subject matter* forms the substance of and *was covered by the erased third claim* of the specification. (Rec., p. 104, for third claim.)

The *fourth subject matter* is for arranging the stove eccentrically upon a circular base, and *was covered by the erased fourth claim.* (Rec., p. 104.)

The first claim is, therefore, for a particular construction of fire pot, suspended within a circular stove substantially as described, there being provision made for the admission of air to said fire pot below its point of suspension, so that such fire pot can perform its functions due to the changes made in its construction by the inventors.

The fire pot is referred to in the specification by the letter *G*; and after explaining how it is to be supended from its upper flange within the draft and ash chamber, the inventors say: "It is made with vertical openings "through its sides for the admission of air into the body "of coal within it." (Rec., fol. 250.)

How these vertical openings are made, and what they are, does not appear, except by recourse to the drawings; *and to such drawings we are entitled to go to get its construction if the specification does not detail it but refers us to the drawings by letter for the purpose.*

On inspection of figures 2 and 5 we find a fire pot about one-half of the wall (the upper half) composing its depth being solid and about one-half (the lower half) containing "vertical openings."

These are the "vertical openings" of the claim.

This is the perforated fire pot which is claimed in the first claim, and it is a new construction in the art.

This "perforated fire pot," as it is called in the first claim, is the thing invented, within the eye of the law, so

far as said claim is concerned. The phraseology of the claim is not such as would be used by the patent attorneys of the present day; but on examining it carefully and comparing such claim with the state of the art, it will be found that this particular construction of fire pot is the change made by, and consequently the invention of, these patentees.

The defendant is in error in asserting that the grate being separate from the fire pot (instead of rigidly attached thereto by reason of the anti-clinker improvement) relieves it from the charge of infringement. The first claim is not limited to a rigidly attached grate so that both can be lifted out together, as the cancelled *third* claim demonstrates. (See Rec., p. 104.)

If such were the scope of the first claim as contended for by defendant's counsel, he is brought face to face with the absurdity that the first and third claims are the same. The Patent Office then would, on the reference given to the third claim, have also refused a patent on the first claim.

The only question of fact that is here left for your Honors to examine into is: Whether such change is substantial and involves invention?

On this point it is respectfully submitted there is no doubt.

Let us examine the proofs respecting it.

II.

THE CONSTRUCTION OF THE FINGERED FIRE POT, AS CLAIMED, IS A SUBSTANTIAL CHANGE AND GIVES NEW RESULTS.

It is stated in the specification just preceding this claim as follows:

"Our object is *to maintain such an intense heat in the fire pot by the free supply of oxygen to the incandescent*

coal therein all around this pot that there will be little or no smoke formed after the fire is started. In this way *we obtain a more perfect combustion* and are enabled to burn soft coal *and obtain the greatest heating effects therefrom.*"

Mr. Selkirk testifies:

"I find in complainant's stove, in the patent in suit, a fire pot of circular form and having flaring sides, which is described as being made of cast iron, *with its upper half or portion made solid, and its lower half or portion grated or slotted;* this form of construction I do not find in any of the stoves in defendant's several exhibits mentioned in the question. This fire pot, termed in the patent "a perforated fire pot," *is a new device*, in view of the state of the art as shown by defendant's exhibits in this case" (Rec., p. 54, fol. 126).

Also:

"In view of the state of the art, prior to November 21, 1865, and from what is shown in the drawings described in the specification, I understand that the device called in the claim quoted, "a perforated fire pot," to be a new device. That is to say, *a fire pot having such a form of construction as to make it new* in view of the state of the art prior to the date of the patent. And with this new fire pot there is used in combination therewith a grate bottom and a circular stove in which the perforated fire pot is suspended, and draft openings located in the walls of the stove below the point of suspension of the fire pot. These four elements the perforated fire pot, the grate bottom, the circular stove in which the perforated fire pot is suspended, and the draft openings, co-operate together to produce the different and better manner of combustion of the fuel, and the higher temperature of the escaping products of combustion, for operation with the several plates forming the walls of the stove, so that the stove is made to be much more efficient for warming apartments than one of smaller construction, and will be of better service than one or two sizes larger of the older form of construction."

"This different and better manner of combustion of the

fuel, is stated in the patent, by the inventors, to be the object of their improvement; for they say in language as follows":

> "Our object is to maintain such an intense heat
> "in the fire pot by the free supply of oxygen, to the
> "incandescent coal therein, all around the fire pot-
> "that there will be little or no smoke formed after
> "the fire is fully started."

"As carbonic oxide, when cooled, is smoke, and as the inventors have successfully provided means by which but little carbonic oxide would be produced from the fuel, while being burned, they have fully accomplished one of their objects as declared in the patent." (Rec. pp. 57, 58.)

"SOLID" AND "BASKET" FIRE POTS.

The solid is the old and most familiar form of fire pot. With reference to both kinds, Mr. Selkirk, complainant's expert, testifies (Rec. p. 36, fol. 92):

"In obedience to this natural law, when a fire pot is filled with burning fuel, and the draught force of the chimney is being exerted, and the intake of the air to the draught chamber is constant, and no passage way of the exit is provided except through the horizontal grate at the lower end of a solid fire pot, (as shown in Oriental Stove Complainants' Exhibit 11,) the air passing upward through the horizontal grate, will enter into the body of the fuel and pass between the particles of the same to part with its oxygen, which oxygen will unite with the carbon and cause a combustion of the fuel. *With a solid fire pot and with a limited supply of air, as can only be had with a simple horizontal grate, a rapid combustion of the fuel would only be had in the lower portion of the fire pot, while the combustion of the fuel, at the top, will be less rapid as the temperature of the products would be low.*"

With a perforated fire pot, (like the one shown in the patent in suit and in Complainants' Exhibit 13, and with the fire pot in defendant's stove, and in drawing Complain-

ants' Exhibit 14,) the influence of the draft force of the chimney with an adequate intake of air to the draught chamber, will cause the air to have passage into the body of the fuel, through the openings in the horizontal grate, and also through the slots in the sides of the grated zone of the fire pot in both cases, as indicated by arrows in Exhibits 13 and 14. *This passage of the air through the slots of the grated zones of the respective fire pots will be, in both cases, at points below the plane of the lower end of the solid web or upper zone of the fire pots, and through the body of the fuel enclosed about by this solid web or zone; and a far greater supply of air, to the fuel, will be had in the fire pots in complainants' and defendant's stoves, than can be had when only passing through openings in a horizontal grate at the bottom of a solid fire pot* (as employed in an Oriental stove as illustrated in Complainants' Exhibit 11). *The combustion of the fuel in complainants' and defendant's fire pots, by reason of the greater supply of air to the fuel within, will be more rapid, and the products of combustion be of higher temperature from the use of those fire pots, than will be had with solid fire pots like that in the Oriental.*"

"*With fire pots made grated in their sides from bottom to top, as shown in Defendant's Exhibit Hunt patent,* and also in Defendant's Exhibits Magee and Russell's (English) patents, a different operation of the air is had and different results produced; for when the draft force of the chimney is exerted and a sufficient intake of air to meet the demand of the draft force is supplied, *a portion of the air will enter the body of the fuel* (*if the fire pot be filled*) *and another portion of the air will pass directly into the combustion chamber through the upper ends of the slots between the gratings. With this partial passage of the air to the combustion chamber, the combustion of the fuel in the fire pot will be less rapid than would be the fuel in a solid fire pot supplied with air through a horizontal grate only; and also far less rapid than would be the combustion in a perforated fire pot, in which the supply of air is through the openings of the grate below and the slots in the grated zone, as shown in the stove in the patent in suit and de-*

fendant's stove; while the temperature of the products of combustion will also be greatly reduced."

"After fuel has been burned for five to seven hours with ordinary rapidity, there will be an accumulation of ashes on the grate bottom of the fire pot, and to such an extent as to tend to retard or obstruct the passage of the air into the body of the fuel in the fire pot, though the draught force of chimney may be exerted the same as before such accumulation. This accumulation of ashes will operate to affect and greatly change the results from what would be, was the grate bottom clear of ashes, when solid fire pots (like that shown in the Oriental stove, Complainants' Exhibit 11) and the Hunt fire pot (in Defendant's Exhibit Hunt Patent, and Complainants' Exhibit 15) are used; while the operations and results will not be materially changed when such accumulation of ashes is had in perforated fire pots like that shown in the stove in the patent in suit and defendant's stove Fort Orange and illustrated in Complainants' Exhibits 14 and 15."

" When the accumulation of ashes, say two inches deep, is had in a solid fire pot, only a small quantity of air will pass into the body of the fuel in the fire pot; this will cause a very low combustion and a low temperature of heat, so that the stove will be of little or no use for heating a room in cold weather. With a solid fire pot when permitted to run from say, ten at night until six o'clock in the morning, without removal of the ashes, the stove having such a fire pot, would be inefficient for maintaining a comfortable temperature of a room for that length of time in ordinary winter weather." (Rec., p. 38, fol. 94.)

Having special reference to the "basket" or all slotted fire pots, he says:

" With the accumulation of ashes of two inches on the bottom grate of a fire pot like that shown in the stove in Defendant's Exhibit Hunt Patent, and in the drawings Complainants' Exhibit 15 (as I have indicated by red lines in that drawing, Exhibit 15), obeying the natural law governing the movement of currents, under the influence of the draft force of the chimney and the pressure of air in the room to the draft chamber and thence to the exit,

the air will not have passage upward through the ash zone above the grate, but will have passage through those portions of the slots between the grate bars which are highest in the sides of the pot, while but a small measure of the air thus passing through the slots will enter into the body of the fuel; the greater measure of air will pass through the upper ends of the slots almost directly into the combustion chamber, and cause a greater reduction of the combustion and the products of the same, than would be had with a solid fire pot, as I have just stated, for this reason:—the air passing over the top surface of the fuel in a Hunt fire pot would operate to cool the top surface of the fire, which cooling would not be had with the solid fire pot with no air admitted over the same. A stove having a fire pot constructed either as the Hunt, Magee, or Russell fire pots, when run from evening until morning, say eight hours, would be but little, if any better than no stove in ordinary winter weather, or a stove with no fire at the end of eight hours running without attendance, for the reason that but a small portion, if any, of the fuel would be in a state of combustion."

"*In stoves having perforated fire pots, like that shown in the stove in the patent in suit,* and in drawings, Complainants' Exhibit 13, and in defendants' stove Fort Orange, and drawings, Complainants' Exhibit 14, *this accumulation of two inches of ashes on the grate bottom, would not very materially change the operation or results from that had before such accumulation of ashes is had;* the reason for this is, that after the accumulation has been such as to produce the ash zone to the depth indicated by red lines (in Exhibits 13 and 14), *ample openings will yet remain in the sides of those fire pots below the solid web or zone of the same, through which the air would readily have passage into the body of the fuel within the fire pot;* and air, in its passage, would part with its oxygen, and the oxygen would unite with the carbon freed from the burning fuel, and cause a rapid combustion of the same, and a high temperature of products of combustion. This will result in highly heating the several outer plates of the stove against which they would impinge when passing towards the exit. *Stoves having perforated*

fire pots like that in the stove in the patent in suit may be run from evening until morning, or for eight hours or more without attendance, and be effective for comfortably warming apartments" (Rec., pp. 38, 39).

Let us take the Hunt fire pot as a type of this "basket" class of fire pots. Mr. Selkirk says:

"I would here state in explanation as to the different results had from the use of the Hunt fire pot and those from the fire pot in the stove in the patent in suit; to properly burn coal in stoves for heating purposes, so that high combustion of the fuel will be obtainable when desired, the air admitted and intended to contribute oxygen to the inflammable gases from the *fuel, should be made to pass through such a depth of fuel* (especially when hard coal is used), *as will cause the oxygen in the admitted air to thoroughly mix with the liberated carbon from the coal before its passage to the combustion chamber, so that it will unite with the same in proportion of two of oxygen with one of carbon, and produce mainly* (*as largely as possible*) *carbonic acid.* The fire pot in the patent in suit is, by reason of its form of construction, *shown and described in that patent, a mechanical device, well adapted and calculated to give to both the fuel and the air those conditions, and produce those operations,* with both the liberated carbon and the air, for producing this high and rapid combustion of the fuel which will make the stove more effective for heating purposes.

"However, *if the air* (intended to contribute oxygen to the carbon as it is liberated from the fuel) *is permitted to escape directly, in a large measure, into the combustion chamber above the fire pot without being forced to first pass through a sufficient depth of fuel, the great volume of air will not part with its oxygen before entering the combustion chamber, the combustion of the fuel will be slow and the temperature of the gaseous products will be greatly reduced;* and they will not be effective for heating the several plates forming the outer walls of the stove to make them effective as radiators for warming a room. *The fire pot in the Hunt stove,* by reason of its form of construction shown and described

in the Hunt patent, *is calculated to give to the fuel and the ingoing air these unfavorable conditions which I have just mentioned; and the fuel will be burned with low combustion,* and the temperature of the products of combustion will be low and of little value for heating the plates comprising the outer walls of the stove" (Rec., p. 33, fols. 86–87).

See drawings Complainants' Exhibit 14, Fort Orange fire pot.

Complainants' Exhibit No. 13 (Hunt fire pot), and testimony in connection therewith (Rec., p. 36, fols. 91–92).

He again says, referring to depth of solid part of Rath bone & Hailes fire pot, and which is elsewhere shown to be about one-half the whole depth of the fire pot (infringing fire pot is of substantially the same depth, Rec., p. 71, fol. 217):

"About that depth (3½ inches), either a little more or a little less, according to the size of the coal, would be the depth best adapted in the manufacture of stoves to be used by the public generally. That is what I meant to be understood, and is my theory. Not, that because such a depth of solid portion of the fire pot forces the air to pass through the body of the fuel, but because air passing through such a depth of fuel (of the sizes I have mentioned) will produce a higher combustion and a higher temperature of the products of combustion escaping from the top surface of the burning fuel, and thereby make the stove more efficient for heating purposes in cold weather, as compared with the combustion of the fuel and temperature of the products of combustion escaping from the top surface of the fuel where the fuel is held within a grated cylinder or basket; and also as compared with the combustion of the upper layers of the fuel and the products of the same had from the use of solid fire pots of the depth they were usually made" (Rec., p. 70, fol. 215).

The conclusion follows from all this testimony that *it is a substantial change made, namely,* a construction which has the effect *not only to pass the air through the wall of*

a fire pot, but to pass it through in such a way that it will first go through a considerable body of the incandescent fuel so as to get highly heated and enable the gases such as carbonic oxide, hydrogen and products of destructive distillation to be perfectly combusted by it.

Also, so that *by reason of its construction no accumulation of ashes in the grate surface will prevent the passage of such air through the sides or wall of the fire pot* to accomplish said above referred to object.

The defendant has attempted to show that an all grated or " basket " fire pot will operate as well as the complainant's, or " Fort Orange."

Mr. Hagan says he tried both; and that he could not distinguish any difference between the two in the operation of burning the fuel (Rec. p. 106, fol. 545).

Mr. Hagan does not however tell us just how he fed these respective fire pots. No doubt if he built up the bed of coal in the combustion chamber to get the equivalent of a half solid fire pot, he might get an approximation to the result attained by the patentees's fire pot, but as to the labor and care there was in doing this, he is as silent as it is possible to be.

A conclusive answer to all this is: " *Why not use a "basket" grate if you can get such good effects without special care, effort and attention*, and leave the inventors to enjoy what change they have made in the fire pot; and through which all the desired advantages of a good fire and quick and long continued combustion are attained *without special care, effort or attention.*

Mr. Selkirk, (complainant's expert) on the other hand, gives all the facts connected with the running of one of these " baskets " grates, so called. (See Rec., p. 60, fols. 136–139.)

He conclusively establishes the utility of a fire pot containing a solid upper half and a slotted lower half. His test, by *adding a zone of heavy paper to the upper portion of the basket grate and the resulting revival of the fire, goes to prove that there is a substantial change wrought in the construction of the fire pot as soon as either the*

solid fire pot is slotted in its lower half, or the "basket" fire pot is constructed with a solid upper half.

Mr. Keep corroborates Mr. Selkirk as to test of fire pots (Rec., p. 65, fol. 146; p. 68, fol. 212).

We see "basket" grates *illustrated* in patents, *but they are not in practical use.*

It is plausible to assert that such a mechanical device will accomplish a certain result, *but a pertinent inquiry is, has it accomplished it and is it now accomplishing it?*

The new results by the use of the fingered fire pot of the Rathbone & Hailes and defendant's stoves, are shown by the proofs to be:

1. That the *upper portion of the body of the fuel is burned under the best conditions, as in a shallow solid fire pot* (Selkirk, Rec., p. 33, fol. 85).

2. That *all the air admitted within the sides of the fire pot will be made to pass through the fuel and be utilized to effect the perfect combustion of the fuel* (Rec., fols. 85, 86).

3. That a sufficient and liberal supply of air will be admitted to the burning fuel in the fire pot *when a large accumulation of ashes is on the grate surface* (Rec., p. 38, 39).

III.

The Disclaimer.

After the taking of proofs a disclaimer was filed to so much of the first claim as would include, broadly, perforations or openings in the sides of a suspended fire pot, and limiting such claim to—"A fire pot suspended from its upper edge with substantially the upper half of its sides made solid and substantially the lower half of its sides containing perforations or openings."

This disclaimer has been properly filed under the statute.

Silsby v. *Foote*, 20 *How.*, 390. 378.

All doubt, therefore, as to the foregoing being the proper construction of the first claim, is thereby set at rest.

The examination into the evidence respecting the alleged anticipating structures is also greatly simplified by reason of this disclaimer.

It is not unreasonable delay not to file a disclaimer of a bad claim until it has been held bad by the Court, but it will deprive plaintiff of his costs.

Burdett v. *Estey*, 15 *Blatch.*, 349.

Time of unreasonable delay in filing a disclaimer begins when knowledge that claim is bad comes home to the patentee.

Singer v. *Walmsley*, 1 *Fish Pat. Cas.*, 558.
See also *O'Reilly* v. *Morse*, 15 *How.*, 62; *Seymour* v. *McCormick*, 19 *How.*, 96; *S. C.*, 3 *Blatch.*, 209; *Potter* v. *Whitney*, 3 *Fish*, 77; *S. C.*, *Lowell*, 87.

IV.

Hunt Patent—A "Basket" Fire Pot.

This patent contains what is called a "basket" fire pot.

The curved bars composing the basket form extend from the bottom to top of the fire pot; all terminating *at top in a narrow band* necessary to connect the bars at such point, *and at the bottom in another narrow band.*

The Hunt specification reads thus:

"The fire pot *P* is made of cast iron bars or strips, "arranged either in *funnel* or *basket* form (see figure 2) "bound together by a *rim of cast iron at top*, all converg- "ing or *terminating in a band or rim at bottom*—the "whole being cast together."

Rec., *p.* 99, *fol.* 453.

Mr. Selkirk, comparing this Hunt stove with that shown in complainant's patent, says:

"The fire pot in complainant's stove is materially different in the character of its construction, being composed of a solid zone of cast metal, extending from the top edge of the fire pot downward to a distance nearly to one-half of the vertical depth of the pot, and of a lower zone or portion composed of a series of alternate bars and slots, the bars made in solid connection with the solid web of the upper zone of the pot. The specification referring to the fire pot in Rathbone-Hailes patent (Complainant's Exhibit 1) says in language as follows:"

Figure 5 is a side view of the same (referring to the fire pot). * * *

The fire pot is made of cast iron, of a flaring form and of such diameter as to leave a free space *d* all around it when arranged within the stove. It extends from the enlarged fire chamber, *C*, down into the ash chamber, *B*, and it is made with vertical openings through its sides *for the admission of air into the body of the coal within it.*

"From this description, taken in connection with the drawings (showing the fire pot in Figures 2 and 5), it will be readily understood, that in its character as a device for holding coal to be burned, and for compelling the air to pass into the body of the coal within, it is a different device from that shown and described in the *Hunt patent, which device is described as being made of cast iron bars or strips bound together above by a rim of cast iron and terminating below in a rim or band at the bottom;* in this form of construction, the bars, thus held at their tops and bottoms, are made to hold the fuel, while the slots between the bars, also extending from the bottom to the top, are calculated to admit air in only a limited measure into the body of the fuel within, *while the greater measure of air will readily enter directly into the combustion chamber through the upper end portions of the slots.*" (Rec. p. 31, fol. 83.)

He further says, referring to the defect in the principle upon which such fire pots as those contained in the Hunt, Russell and Magee stoves are constructed:

"In stoves, as generally constructed these two directions may be either directly into the fire pot and through the interstices between the particles of fuel within the same (as through the fire pot of the stove in the patent in suit), until the oxygen has separated in whole or in part from the air, to pass onward and upward as constituent parts of carbonic acid, or carbonic oxide, or both, mixed with nitrogen, to the exit; or, more or less directly to the combustion chamber without entering into and passing through the body of fuel, as in the direction first described. This latter direction of passage of the air may be had through openings, seams, or spaces between the upper

end of the fire pot and outer wall of the stove, or be had through the upper end portions of the slots of grated fire pots constructed as shown in Defendant's Exhibits, Magee, Russell and Hunt Patents." (Rec., p. 34, fol. 88.)

"*When the direction of passage of air is had through openings, seams or spaces between the upper end of the fire pot and the wall of the stove, the air so passing will be diverted from passage through the body of the fuel in the fire pot, and will readily pass into the combustion chamber and over the top surface of the fire. This will effect a reduction of both the combustion of the fuel and the temperature of the products passing therefrom.* But when the passage of air is into the body of the fuel in the fire pot at a point several inches below the top of the fire pot (the fire pot being full, or nearly full, of coal) the air will be made to enter in between the particles of burning fuel and pass up through the same and part with its oxygen, which will unite with the carbon liberated from the coal and produce a rapid combustion of the same, and increase the temperature of the products, which will highly heat the plates against which they move in their passage towards the exit, and thereby make the stove most effective for heating apartments" (Rec., p. 35, fol. 90).

See Complainants' Exhibit 15 to effect that air would pass into the combustion chamber in the Hunt stove, traversing little or no fuel; the perforations or openings operating virtually the same as do the damper openings shown in the Oriental stove, Complainants' Exhibit 11, to retard the combustion of fuel in the fire pot, and lowering the temperature of the products passing from the top of the same (Rec., p, 36, fols, 91–92).

See comparison made between Hunt fire pot, Exhibit 15, Complainant's Exhibit 13, and Defendant's Exhibit 14, fire pots heretofore cited (Rec., pp. 38–39).

This contrasting of the respective fire pots by Mr. Selkirk is borne out by the description in the Hunt specification of what this *Hunt construction* of fire pot is; *and proves that it is substantially unlike the complainants' fire pot.*

"My improvement consists in constructing the *fire pot of curved slats or bars* so *as to exhibit*, with the aid of a double tier of mica plates, *as much of the fire*, or nearly so, *as an open grate*" (Rec., p. 98, fol. 452).

See also description as to how it (fire pot) is to be constructed, before cited at fol. 452, p. 99.

It is also stated at fol. 454, p. 100, that both the "grate and fire pot *are to operate as a grate.*"

Because the fire pot was *entirely open* or of "basket" form, it was found necessary, in order to preserve the brightness of the contained fire, *to shield* it from the cold air by a special arrangement or surrounding hopper, *s, s,* (see claim, Rec., p. 101).

The *slight depth*, added to the fire pot depth, due to the width of the shoulder or projection on the inside of the stove on which the flange of the fire pot rests (which is purely accidental and of little value) does not give the benefits and advantages in use which are found in complainant's fire pot.

A *rim* at top of fire pot, thick enough for the purpose of holding together the bars, plus a ledge on which it rests, may give *occasional and partial* approximate results, *provided the fire pot is always kept brim-full of coal.*

The construction of fire pot as limited by complainant's first claim and disclaimer is not there, however, and consequently but the *partial* results of complainant's invention attained at *occasional* times.

It is therefore submitted that the Hunt patent does not anticipate the Rathbone and Hailes construction or invention, as secured by the first claim and limited by the disclaimer.

V.

Russell Patent—A "Basket" Fire Pot.

This is virtually the Hunt stove again; and all that has been said respecting the Hunt construction not being the Rathbone and Hailes construction of the fire pot equally applies to this (Russell) stove.

It is only necessary to consider the nearest approach to complainant's patent.

One modification in this (English) patent refers to, but nowhere else in the patent is a *suspended* fire pot spoken of; and really all the illustrations, as well as this modification does not show more than what has already been discussed with reference to the Hunt patent.

Mr. Selkirk thus disposes of it:

"Russell, however, describes a modification which *may be made, by which the fire dish may be suspended instead of supported*, as shown, for he says in his specification as follows:

"'Instead of making the fire *dishes* to turn on a pivot, as previously described, I sometimes hang them by a projection or flange formed on the upper ring of fire dish, *A*, which flange rests upon a corresponding projection on the inside of the casing, as shown in dotted lines at *k*, *k*, Figures 1 and 2.'

"It is plain to me that when this modification of manner of supporting the *fire dish* in the Russell patent is resorted to, it would not produce a grate bottom in lieu of the solid central base portion connected with the lower ends of the grate bars of the fire dish, nor produce a fire pot which would have a solid upper portion or zone adapted to inclose closely around the upper half or body of the fuel in the fire dish."

"It is also evident to me that in this modification of a suspended grated fire dish, the air (or a large portion of the air), passing from the chamber surrounding the fire dish, *would pass through the upper end portions of the slots directly into the combustion chamber above the fire*

pot, without any great measure of air entering into the body of the fuel, while in the stove in the patent in suit and infringing stove Fort Orange, the air passing from the draught chamber in each case would enter into the sides of the body of the fuel, at points below the upper half of the body of the fuel, and have diverse directions of passage through the interstices between the particles of fuel in the upper half in the body of the same" (Rec., p. 3088, fol. 80).

VI.

CONSTRUCTION OF THE STATUTE, AND THAT THE DISCLAIMER WAS FILED UNDER SECTION 4917 AND NOT UNDER SECTION 4922 AS THE LEARNED COURT BELOW SUPPOSED.

The question on which this case finally turned was whether the complainants ought not to have proceeded by reissue of the letters patent to correct the fault of the specification instead of by the filing of a disclaimer, and for the supposed reason that there is not a specification by which the public can definitely distinguish what is new and belongs to the patentees from what does not really belong to them although claimed.

This question was not argued or discussed by counsel at the final hearing.

SEC. 4917. Whenever through inadvertence, accident or mistake, and without any fraudulent or deceptive intention, a patentee *has claimed more than that of which he was the original or first inventor or discoverer*, his patent shall be valid for all that part which is truly and justly his own, *provided the same is a material or substantial part of the thing patented;* and any such patentee, his heirs or assigns, whether of the whole or any sectional interest therein, may, on payment of the fee required by law, make disclaimer of such parts of the thing patented as he shall not choose to claim or to hold by virtue of the patent or

assignment, stating therein the extent of his interest in such patent. Such disclaimer shall be in writing, attested by one or more witnesses, and recorded in the Patent Office; and it shall thereafter be considered as part of the original specification to the extent of the interest possessed by the claimant and by those claiming under him after the record thereof. But no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it.

SEC. 4922. Whenever through inadvertence, accident or mistake, and without any willful default or intent to defraud or mislead the public, a patentee has, in his specification, *claimed to be the original or first inventor or discoverer of any material or substantial part of the thing patented*, of which he was not the original and first inventor or discoverer, every such patentee, his executors, administrators and assigns, whether of the whole or any sectional interest in the patent, *may maintain a suit at law or in equity*, for the infringement of any part thereof which was *bona fide* his own, if it is a material and substantial part of the thing patented, *and definitely distinguishable from the parts claimed without right*, notwithstanding the specifications may embrace more than that of which the patentee was the first inventor or discoverer. But in every such case in which a judgment or decree shall be rendered for the plaintiff no costs shall be recovered unless the proper disclaimer has been entered at the Patent Office before the commencement of the suit. But no patentee shall be entitled to the benefits of this section if he has unreasonably neglected or delayed to enter a disclaimer.

These sections of the Revised Statutes are the same as sections 7 and 9 of the Act of 1837.

Neither section of this statute is completely paralleled by the English statute (5 and 6, Will. IV., c. 83); but there is a sufficiently close resemblance to justify one in referring to the English decisions in order to determine the scope of a disclaimer under either section.

The English statute is therefore given below for convenience of reference when citing English cases.

5 and 6 Will. IV., c. 83.

AN ACT TO AMEND THE LAW TOUCHING LETTERS PATENT FOR INVENTIONS:

"*Whereas*, it is expedient to make certain additions to, and alterations in the present law touching letters patent for inventions, as well as for the better protection of patentees in the rights intended to be secured by such letters patent, as for the more ample benefit of the public from the same; Be it enacted by the King's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same: That any person who, as grantee, assignee, or otherwise, hath obtained, or shall hereafter obtain letters patent, for the sole making, exercising, vending, or using of any invention, may, if he think fit, enter with the Clerk of the Patents of *England*, *Scotland*, or *Ireland*, respectively, as the case may be, having first obtained leave of his Majesty's Attorney-general or Solicitor-general, in case of an *English* patent, or the Lord Advocate or Solicitor-general of *Scotland* in the case of a *Scotch* patent, or of his Majesty's Attorney-general or Solicitor-general for *Ireland* in the case of an *Irish* patent, certified by his fiat and signature, *a disclaimer of any part of either the title of the invention or the specification, stating the reason for such disclaimer*, or may, with such leave as aforesaid, *enter a memorandum of any alteration in the said title or specification, not being such disclaimer or such alteration as shall extend the exclusive right granted by the said letters patent;* and such disclaimer or memorandum of alteration, being filed with the said Clerk of the Patents, and enrolled with the specification, shall be deemed and taken to be part of such letters patent or such specification in all courts whatever; Provided always, that any person may enter a caveat, in like manner as caveats are now used to be entered, against such disclaimer or alteration, which caveat, being so entered, shall give the party entering the same a right to

have notice of the application being heard by the Attorney-general or Solicitor-general or Lord Advocate respectively: Provided also that no such disclaimer or alteration shall be receivable in evidence in any action or suit (save and except in any proceeding by *scire facias*) pending at the time when such disclaimer or alteration was enrolled, but in every such action or suit the original title and specification alone shall be given in evidence, and deemed and taken to be the title and specification of the invention for which the letters patent have been or shall have been granted. Provided also, that it shall be lawful for the Attorney-General or Solicitor-general or Lord Advocate, before granting such fiat, to require the party applying for the same to advertise his disclaimer or alteration in such manner as to such Attorney-general or Solicitor-general or Lord Advocate shall seem right, and shall, if he so require such advertisement, certify in his fiat that the same has been duly made."

Here is the disclaimer in this case:

To the Commissioner of Patents:

Your petitioners, William Hailes, James Gray and Charles Selkirk, citizens of the United States, and all residing at Albany, in the State of New York, represent that in the matter of certain improvements in coal stoves, for which letters patent of the United States, No. 51,085 were granted Lewis Rathbone and William Hailes, on the 21st day of November, 1865, they are the sole owners by virtue of the following assignments, namely: William Hailes to James Gray, September 26th, 1879, recorded September 29th, 1879, Liber R 24, p. 107; Lewis Rathbone to Rathbone, Sard & Co., July 6, 1880, recorded February 14, 1881, Liber L 26, p. 91; Rathbone, Sard & Co. to James Gray and Alexander Selkirk, October 17, 1880, recorded February 14, 1881, Liber L 26, p. 93; Alexander Selkirk to Charles Selkirk, February 12, 1881, recorded February 14, 1881, Liber L 26, p. 96; James Gray to William Hailes, February 12, 1881, recorded February 14, 1881, Liber L 26, p. 95; and that they have reason to believe that, through inadvertence, accident or mistake, the specification and claims of said letters patent

are too broad, including that of which said patentees were not the first inventors. Your petitioners, therefore, hereby enter their disclaimer to so much of the first claim as covers perforations or openings in the sides of a suspended fire-pot extending throughout the entire depth of sides, and limiting such perforations or openings to substantially the lower half of the fire-pot; the material or substantial part of the thing patented in and by said claim not hereby disclaimed being as follows:

A fire-pot suspended from its upper edge with substantially the upper half of its sides made solid, and substantially the lower half of its sides containing perforations or openings.

Evidently there are two sections under which a disclaimer can be made in this country:

FIRST.—*Under Section* 4917, *where the claim is too broad;* that is to say, in the language of the section, where the patentee "*has claimed more than that of which* he was the original and first inventor or discoverer."

SECOND.—Under section 4922, where a patentee "has in his specification *claimed* to be the original and first inventor or discoverer of *any material or substantial part of the thing patented;*" and it goes on to state that he "may maintain a suit at law or in equity for the infringement of any part thereof which was *bona fide* his own, if it is a material and substantial part of the thing patented *and definitely distinguishable from the parts claimed without right.*"

It will be perceived from the phraseology of the disclaimer in this case that it follows and was filed under section 4917; and is that kind of a disclaimer which is required when the *claim is too broad,* or in the exact language of section 4917 "*has claimed more than that of which he was the original or first inventor;*" the *only proviso* attached to the section permitting a disclaimer for such a cause being as follows: "His patent shall be valid for all

"that part which is truly and justly his own, *provided* "*the same is a material or substantial part of the thing* "*patented.*"

In the other section (4922) permission is given to disclaim *everything* and *anything*, *provided what is disclaimed is a material and substantial part of the thing patented, and further provided* that what is left and proposed to be maintained by suit at law or in equity "*is a substantial and material part of the thing patented;*" and *further provided*, that what is left *is definitely distinguishable from the parts claimed without right.*

That such is the proper construction of section 7 of the Act of March 3, 1837 (now section 4917 of the Revised Statutes), is seen from several decisions.

"Section 7 of the Act of March 3, 1837, provides that *where the specification is broader than the invention*, the patentee, his administrators, executors and assigns may disclaim such parts as are not claimed under the patent, stating therein the extent of his interest in such patent."

Brooks et al. vs. *Jenkins et al.*, 3 *McLean*, 432.

In the case of a disclaimer of a broad claim, the Court said:

"II.—The disclaimer indorsed on the back of the patent was properly rejected when offered in evidence by the defendants for want of proof that it had been executed by the patentee; and besides, if it had been admitted, the Court would have been bound to give to it *the full effect of a disclaimer under section 7 of the Act of March* 3, 1837, 5 U. S. Statutes at Large, 193." (*Foote* vs. *Silsby*, 1 *Blatch.*, 445).

Mr. Justice Blatchford remarked in Tuck *v.* Bramhill, 3 Blatch., 95: "The Supreme Court sustained such disclaimer as a good disclaimer under section 7 of the Act of 1837." (14 How., 218, 221).

It is respectfully submitted that if the disclaimer in this suit is kept within its proper section no confusion will arise; and it clearly cannot have any objection urged against it, such as that the matter *not* disclaimed was not definitely distinguishable from the parts claimed without right, "because this proviso has reference to other kinds of disclaimers than that where the claim is too broad or where the patentee has by his claim merely claimed too much—more than that of which he was the inventor, &c."

Were it a case of two distinct claims in one patent which were sought to be separated by a disclaimer. with considerable confusion existing in the specification as to whether the two inventions could be separated so as to disclaim one and discern from said specification what manner of invention was left after disclaimer, then it would come under section 4922; and the additional *proviso* would be operative, requiring "*the part left to be definitely distinguishable from the parts claimed without right.*"

Other illustrations might be given where the disclaimer would fall under section 4922, such as double or alternative claims with one of the inventions not perfectly discernable by the specifications *and drawings*, and such inchoate subject matter sought to be held after such a disclaimer of what was clear and specific.

This is seen from the following extract from an American case:

"In other words the patentee may in such a case take out a valid patent for the combination, and also include therein a right to each distinct improvement severally contained in the same machine. Such was the doctrine maintained by this Court in *Wyeth* vs. *Stone* (1 Story, R., 273); and it stands confirmed by the obvious intent of the *9th section of the Patent Act of* 1837, *ch.* 45, *which gives to the patentee a right of action for a piratical use of any of his invented improvements*, which is distinctly stated in his patent, *although he may, by mistake, accident or inadvertence, have claimed others in his specification* of which he was not the inventor."

Pitts vs. *Whitman*, 2 *Story*, 609.

Also, Justice Curtis said:

"Now, the first claim of this patent *does not come within the category of the ninth section. It is not for 'a material and substantial part of the thing distinguishable from other parts;'* but it is the case embraced in the seventh section, where the claim is void because it is too broad."

Silsby v. *Foote*, 20 *How.*, 378.

This is also well illustrated by some of the English cases:

"According to this view, the invention in the disclaimer was not in the original specification. The patentee, under color of disclaiming, introduces a new invention. Such a disclaimer is in effect an attempt to turn a specification for an impracticable generality into a grant for a specific process which is comprised within the generality in one sense, but could not be discovered to be there without going through the same course of experiment which led to the discovery of the specific process in the disclaimer."

"In Queen *vs.* Mill, 20 L. J. C. P., 16, the claim was for many distinct parts; four related to pens and pen-holders; the rest to pencils and pencil cases; the disclaimer was of the four distinct parts relating to pens and pen-holders; and it was held that the patent was valid under the disclaimer for the remaining parts, being distinct practicable inventions clearly specified in the original specification, so that they might be put in practice from thence alone, and the disclaimer merely severed the objectionable parts."

"In Seed *vs.* Higgins, 8 Ellis & B., 755, the original specification was for all applications of centrifugal force to flyers, so as to produce pressure on the bobbin thread. *The diagram showed a new machine as an example of such application of centrifugal force at the upper part of the flyer*, where it was more beneficial than in any other part. It was afterwards found that the application of centrifugal force at the lower part of the flyer was old, *and the plaintiff disclaimed every application except that represented in the diagram. It was held that the patent became valid*

thereby for the machine so represented in the diagram, which was new and useful, and could be made therefrom."

"We distinguish these two cases from the present, because in each a beneficial practical invention was originally specified. Here, we think that cannot be truly said of the plaintiff's original specification, and therefore the plaintiff's claim under this disclaimer is not supported."

Rawlston v. *Smith*, 9 *C. B. N. S.*, 147.

Same case on appeal.

WIGHTMAN, *J.*, now delivered the judgment of the Court.

"The invention as described in the original specification consists in the use of rollers having 'any design grooved, fluted, engraved, milled or otherwise indented upon them;" but it appears from the statements in the disclaimer that the effect desired can *only* be produced by the use of a certain species of roller not particularly described in the specification, namely, a roller having circular grooves, &c., round their surfaces. And all *other* rollers are expressly disclaimed."

But if the *other* rollers disclaimed will not succeed, and the special rollers are alone effectual, then the true invention resides entirely in the process described in the disclaimer; and the original specification does not describe or even suggest the form of roller in which that invention consists. And this is by the disclaimer to extend the right granted by the patent.

The patentee who made and described the invention which is found in the specification *appears not to have conceived the invention mentioned in the disclaimer;* for had he not found out, or if he had, he did not give to the public the necessary elements of the process which is alone effectual as in the disclaimer set forth. And we concur in the opinion expressed by the Court of Common Pleas, that "such a disclaimer is in effect an attempt to turn a specification for an impracticable generality into a grant for a specific process which is comprised within the generality in one sense, but could not be discovered to be there without going through the same course of experiments which

led to the discovery of the specific process in the disclaimer." On this point, therefore, the judgment must be confirmed.

Ralston vs. *Smith*, 11 *C. B. N. S.*, 474.

(*N. B.—There were no drawings to this English patent.*)

Such a case would clearly be within section 4922; and be a bad disclaimer thereunder because the part left after disclaiming, although it might be considered, generally, a material and substantial part of the thing patented, *it was not, however, definitely distinguishable from the parts claimed without right.*

The following is an English case where the patent was saved from this objection *merely by the drawings:*

"Having that intention, in order to comply with the terms on which the patent was granted, of specifying and describing how the work was to be performed, he attaches to *his specification drawings showing one way of applying the principle to a roving machine having a flyer.* And he adds: 'I would here remark that I do not intend to confine myself to this particular method; but I claim as my invention the application of the law or principal of centrifugal force to the particular or special purpose above set forth; that is, to flyers used in machinery or apparatus for preparing slubbing and roving cotton and other fibrous materials, for the purpose of producing a hard and evenly compressed bobbin.' That is, he sets out one mode of application, yet he wishes to state that his patent consists in applying the principle in any way. Then, seeing that this claim is not good, either as comprehending something not new, or as not explaining sufficiently so general a claim, he enters a disclaimer. Now he is entitled to withdraw so much of his original claim as would leave only an application of the particular method. *It comes, therefore, to this, that he claims simply what was in his drawing.*"

Higgins *vs.* Seed, 8 E. & B. Q. B., 773, 4.

(*N. B.—This case was saved because it had drawings showing the specfiic thing left after disclaimer.*)

It is true another view has been taken of the operation of these two sections. That is to say making the first (sec. 4917 or sec. 7) apply to cases where the disclaimer is filed during the progress of the suit; and the second (sec. 4922 or sec. 9) apply to cases where the suit is brought only after disclaimer is filed; and this is probably the reason why in Silsby *vs.* Foote the United States Supreme Court (20 How., 378) put the disclaimer into the 9th Section (now Sec. 4922 of Rev. Stat.), although the dissenting opinion, in that same case, of Justice Grier tenaciously clings to the views of himself, Justice Curtis and Justice McLean, in prior cases (3 McLean, 432) heretofore referred to.

This other view had the support of Justice Story:

"Now, it seems to me that, upon the true construction of this statute, the disclaimer mentioned in *the seventh section must be interpreted to apply solely to suits pending when the disclaimer is filed in the Patent Office;* and the disclaimer mentioned in *the ninth section to apply solely to suits brought after the disclaimer is filed.* In this way, the provisions harmonize with each other; upon any other construction they would seem, to some extent, to clash with each other so far as the legal effect and operation of the disclaimer is concerned."

Wyeth vs. *Stone*, 1 *Story*, 273.

Such other view, however, will support the complainants' position in this case, as *their* disclaimer was filed *pending the suit* and comes under section 7; and the disclaimer is thus brought by the honorable Court under that Section, which does not contain the words "*and definitely distinguishable from the parts claimed without right.*"

In Tuck v. Bramhill, 6 *Blatch.*, 96, Justice Blatchford took a somewhat different view of Sec. 7; but in the main he agreed with Justice Story.

VII.

ASSUMING, HOWEVER, THAT THE DISCLAIMER IN THE PRESENT SUIT WAS FILED UNDER SECTION 4922, REV. STAT. (SEC. 9TH OF THE ACT OF 1837), OR THAT BY REASON OF ITS FILING THE PATENTEES HAVE A REMEDY ONLY UNDER SAID SECTION, STILL IT MEETS ALL THE REQUIREMENTS OF SAID SECTION.

It is conceded by the learned Court below in this case: "Where there is a single claim, but a specification by which the public can definitely distinguish what is new and belongs to the patentee, and what does not really belong to him although he had claimed it, that a disclaimer will right the patentee's mistake."

Now we have just such a case here.

Annexed to the complainants' specification are drawings "making part of this specification" as stated therein.

The fire-pot in Figures 2 and 5 of these drawings is referred to in said specification as "the fire-pot *G*." There is added the following language: "It is made with vertical openings through its sides for admission of air into the body of coal within it."

In the preamble, where it is stated, "and admitting air through the sides of a suspended fire-pot at all points," *it does not mean at any more points than as shown capable of admitting it in said drawings, figures 2 and 5*, and in the description of said pot when it is referred to by the letter "*G*" in such description. So, the reference in last paragraph of the specification where it is stated that air is admitted "all around this pot," means *just as far as it can be admitted by the pot G, stated in the specification and delineated in the drawings annexed thereto.* Now, no "basket grate," or "all grated fire-pot," so-called, is shown anywhere in said drawings.

But the trouble is when we come to the claim: *That* we find so broad that it might be held to include an "all perforated" fire-pot, instead of one perforated as shown in

the drawings, and pointed out in the specification by the "letter *G*" on such drawings; for the claim says "a perforated fire-pot."

The trouble is really not with the drawings or specification (which latter clearly point out and refer to the pot *G*, and nothing else so far as a pot element is concerned), but with the *broad* language of the claim, and *that* alone.

It is "arranging," &c., &c., "substantially as described" within a circular stove, what? Why, "a perforated fire-pot."

This could be taken to include *any* perforated fire-pot, since the specification, which while describing *one* form and illustrating by drawings *one* form, *does not limit the patent to that one form;* it cannot therefore well be held that the claim covers the specific form so described and so pointed out by drawings, *because such claim says a* perforated fire-pot, meaning *any* perforated fire-pot.

Now, could there be a more proper case for disclaimer under either the 7th or 9th sections (section 4917 or 4922, Rev. Stat.), however these sections may be construed?

After all, *only* the broad language of the claim is affected by the disclaimer; and what is left, after so disclaiming, is perfectly consistent with both description *and drawings.*

Assuming, however, that some of the language of the specification made it appear that something else than the fire-pot *G* was intended to be claimed, unquestionably it must be conceded that a basket grate is not there *specifically* described. But assuming as would appear by the learned counsel's argument, on behalf of the defendant, that it is hinted at by the language "*that* air is to be admitted through the sides of a suspended fire-pot *at all points*," do not the drawings show *what construction of fire-pot the inventors refer to as illustrating the application of their invention, and do they not distinguish it by a letter (G)?*

Then is there not, in all common sense, described in the specification a subject matter (the construction of pot shown in the drawings) definitely distinguishable from

all else, and so that on a disclaimer of what is found to be old the claim can be limited to such subject matter?

In the case of *Earle* v. *Sawyer*, 4 *Mason*, 1, Justice Story said:

"This is an explicit description,—to annex drawings where the nature of the case admits of them with *written* references; and when so annexed *they become part of the written description required by the act.* They may be indispensable *to distinguish the thing patented from other things before known.* Surely, then, the act *could not intend studiously to exclude them as part of the written description. That would be to require the end and deny the means.*"

In Curtis on Patents, it is stated:

(*Sec.* 262) "In the case of machinery, the statute directs the patentee to accompany his specification with a drawing or drawings, and written references, where the nature of the case admits of drawings. *The object of annexed drawings is both to distinguish the thing patented from other things known before*, and to explain the mode of constructing the subject of the patent. *It has been settled that the drawings constitute a part of the specification, when annexed thereto, and may be used to explain or help out the otherwise imperfect, description in the specification.* So that it is not necessary that description should be wholly in writing, but it may be partly in writing, *and partly in the drawing; and if by a comparison of the words and the drawings* the one will explain the other sufficiently to enable a skillful mechanic to perform the work, and to show what is the invention claimed, the specification will be sufficient."

Citing Earle *vs.* Sawyer, 4 Mass., 1, 9; Bloxam *vs.* Elsee, 11 Car. and P., 558. Brunton *vs.* Hawkes, 4 B. & Ald., 540; Swift *vs.* Whisen, 3 Fish Pat C., 343.

Curtis on Patents, 4th Ed., 315.

It is therefore inconsistent in Judge Wallace to intimate that drawings cannot serve to "definitely distinguish" the invention in one instance (*i.e.*, where a question of dis-

claimer is involved), in the face of such authorities that they are so recognized in other instances.

JUSTICE CLIFFORD reasoned it out in this wise:

"He states that he has invented a new and improved mode of supplying and supporting a second or extra top-sail yard by means of a truss to the cap of the lower mast head, and also a crane or brace to the heel of the top-mast-top or trestle-trees to the lower mast, *and he refers to the accompanying drawings as containing a full and exact description of the invention; and it is difficult to see what more is needed to render the description complete, unambiguous and sufficient for all practical purposes. Had he stopped there the objection could not prevail*, but he proceeds and states that his invention consists in applying an extra yard to any top-sail, and supporting it upon the cap of the lower mast-head by a truss and crane as 'hereinafter described,' so that the upper top-sail yard may be lowered down in close proximity to the said extra yard. Satisfactory explanations are also given as to the construction of the top-sail and as to the mode in which the improvement operates, and the same is somewhat minutely compared with the old mode, for the purpose of showing the utility and superiority of the improvement over what existed before, and reference is again made, in that part of the specifications, to the drawings as explanatory of the mode of operating the described improvement. 2. Specific directions are then given to enable others skilled in the art to make and use the invention, and the patentee then proceeds to describe with minuteness its construction and operation. Governed by that description, and *aided by the drawings* to which reference is made for every ingredient of the invention, it seems to the Court even that mechanics who have never seen salt water would be able to construct and use the improvement. *Reproduction of that part of the specification in this connection is unnecessary, as the description is plain and easy to be understood without any explanation except what is derived from the drawings.*"

Howes *vs.* Nute, 4 Fisher's Pat. Cas., 265–6.

In several English cases the invention has been limited to what is described in the drawing only.

WILLES, *J.* "Then, as to the words, 'as herein described,' they are properly inserted, for they were in the third claiming clause, and that being struck out their insertion in the middle only makes the specification the same as before; and I think their effect is, as has been so ably expressed by my Lord Chief Justice, *to limit the invention claimed to the holding and moving the fabric at once, in the way described in the drawings;* and I think there is no evidence that that had been previously done."

MONTAGUE SMITH, *J.* "*The question is whether the plaintiff's claim is too wide.* I think it is sufficiently confined to the instrument for both holding and moving the fabric, which is described, used in the way described, and to other similar instruments used in a similar way. . The whole scheme of the specification as *altered* by the disclaimer, seems consistent with this: He disavows all claim *to the parts of the machine first described, and then proceeds at once to the description of the instrument 'g.'* The words 'as herein described' are put after the words 'the instrument 'g,' and not after the word 'arranging;' and then there is a subsequent description of another similar instrument. If this be the true construction, I think the patent had not been anticipated."

Thomas vs. *Welch*, 1 *Law Rep. C. P.*, 202.

Mr. Justice Blatchford so construed a patent in Schneider *v.* Lovell, 10 Fed. Rep., 666; but it was found that neither complainant nor defendant so made their lamp shades, and only for the latter reason was the bill dismissed.

Thus we see that *drawings may be used to make the invention distinguishable from other things improperly described in the specification* (4 Mason, 1); and that with a general specification only, drawings can be referred to, to limit the invention (4 Fish, P. C., 265).

It was also held in Washburn *v.* Gould (2 Story, 122), that "*drawings are to be treated as a part of the written*

specification, and may be referred to, to show the nature, character *and* extent of the claim *as well as to compose a part of the specification.*"

This, then (*drawings*), *is a source to which the public can look in order to definitely distinguish what is new and belongs to the patentee.*

But it may be said as to the *written* part, that the *language of the specification* does not limit it.

The answer is, if it did, then there would not be any need of a disclaimer in this case.

But *Aiken* v. *Dolan*, 3 *Fish*, 209, is analogous to complainant's case so far as language of the specification and claim is concerned. There the specification in its written statements was general; spring needles; no distinguishing feature to limit the new from the old, but by letter (as in this case); and a claim covering a needle (broadly) as in this case; and also drawings showing a special construction of needle, as in this case is shown *the special construction of fire-pot.* The disclaimer was upheld.

Here is a brief extract:

"II. But when the actual invention is thus referred to this improvement alone, the claim in the specification is too broad. It states that the invention consists in the application of the latch or tongue in connection with the hook of the needle, sweeping freely back and forth upon the center pin. *The general operation of a latch needle is described, without any specific restriction to the form represented in the drawings.*" Then follow the words, "What I claim as my invention is the application of a latch or tongue applied to the hook of the needle, and operated as herein described."

* * * * * * * *

"*By a proper disclaimer of the invention of latch needles without any such curvature, the patent would, however, be sustainable for the actual improvement. The complainant purposes through his counsel to disclaim any construction of a latch needle which has not a swell or its equiva-*

lent substantially as shown in the drawings, and, to repeat in the words of the original specification, that what he claims as the invention of the patentee is the application of the latch or tongue, etc., operated as therein described. The effect of such a disclaimer will be to deprive the complainant of all right to recover costs in the present suit. But a Court of Equity sometimes considers that which might and ought to be done as having already been done. There may, therefore, be a decree for a perpetual injunction, each party to pay his own costs without any actual previous disclaimer of record in the Patent Office. According to the decision of the Supreme Court in O'Reilly *vs.* Morse, 15 How., 121, it might perhaps be supposed that I should go further, and, before any actual disclaimer decree an account, or order an issue *quantum damnificatus*. But I do not think that a Court whose decision is liable to a revision upon appeal should in such a case make any decree beyond the perpetual injunction without an actual disclaimer previously recorded in the Patent Office. In the present stage of the case, therefore, I can do no more than award the injunction with leave to disclaim, and afterward to move for such further order for an account, etc., as may be deemed proper. Whether an injunction shall be thus awarded depends upon the decision of the third question."

Aiken vs. *Dolan*, 3 *Fisher's Pat. Cas.*, 206.

That the specification alone in the above cited case did not definitely distinguish the *specific* construction of needle is also evident from the language of the Court in the same case, as follows:

"But upon this part of the case, I was, during the second argument, very desirous to learn *whether, before Hibbert's patent, spring needles had been made with such a bulge or curvature.* They are now sometimes made with it, *and if this had occurred before the patent, I was not quite certain whether it might not, perhaps, with reference to the phraseology of the specification, have some legal operation upon the effect of the complainant's proposed disclaimer.* It now appears that spring needles were, of old, made *with a lateral* or outward bulge; *but*

it has not appeared that they ever had a bulge or swell upward. The inquiry, therefore, does not arise; and this part of the case depends upon the question of infringement alone. Upon this question the argument for the defendant cannot be sustained."

Aiken vs. *Dolan*, 3 *Fisher*, 209.

It has also been held, that because a specification is not in such full, clear and exact terms as to distinguish the same from all other things before known, &c., &c., it will not defeat the patent unless the concealment is proved to have been made for the purpose of deceiving the *public.*

In Whittemore *v.* Cutter, the Court said:

"Another objection is to the direction respecting the specification. It was as follows: 'That if the jury should be satisfied that the specification and drawings filed by the patentee in the office of the Secretary of State were not made in such full, clear and exact terms and manner *as to distinguish the same from all other things before known*, and to enable any person skilled in the art or science of which it is a branch, or with which it is most nearly connected, to make and use the same, this would not be sufficient to defeat the right of plaintiffs to recovery in this action, *unless the jury were also satisfied that the specification and drawings were thus materially defective and obscure by design*, and the concealment made for the purpose of deceiving the public. In this *respect our law differed from the law of England.*

Whittemore vs. *Cutter* 1 *Gall.*, 478.

By the common law the patent was invalid if any material (or distinguishable) feature to the construction of the thing invented was omitted or concealed in the specification.

See in support of this:

"It is not necessary, however, that the specification should contain an explanation level with the capacities of every person, which would, perhaps, be impossible; but, in the language of the Act, it should be expressed in such

full, clear and exact terms that a person skilled in the art or science of which it is a branch would be enabled to construct the patented invention. *By the common law, if anything material to the construction of the thing invented be omitted or concealed in the specification, or more be inserted or added than is necessary to produce the required effect, the patent is void. The doctrine of the common law our patent act has*—whether wisely, admits of very serious doubts—*materially altered; for it does not avoid the patent in such case, unless the 'concealment or addition shall fully appear to have been made for the purpose of deceiving the public,'* Sec. 6. Yet certainly the public may be as seriously injured by a materially defective specification resulting from mere accident as if it resulted from a fraudulent design. Our law, however, is as I have stated."

Lowell vs. *Lewis*, 1 *Mason*, 182.

Hence it would not be proper to give the disclaimer statute a rigid interpretation, or one which restricts its scope; *that is, consider the disclaimer with reference to the specfication alone, ignoring the drawings,* assuming that they are inconsistent with each other, when the law is so benign to inventors *as not* to invalidate their patents when the actual invention is not distinguishable (Whittemore *vs.* Cutter, *supra*) from what was known before, unless fraud existed on their part.

VIII.

THE INVENTORS ARE NOT DEBARRED FROM THE REMEDY OF DISCLAIMER UNDER THESE SECTIONS BECAUSE THEY CAN AVAIL THEMSELVES OF A REISSUE TO CORRECT THE ERROR.

It is conceded that were the inventors *seeking to broaden the scope of their invention, they would be obliged to seek the remedy of reissue.*

To so reform the specification as to cover another invention than what was originally patented, cannot be done, in judgment of law, either by reissue or disclaimer.

But it does not follow that what may be lawfully done by reissue cannot also be accomplished by a disclaimer.

Curtis, after referring to remedy by reissue, distinctly says that specifications may also be amended by another process, that of filing a disclaimer. **(Sec. 286, 4th Ed. Curtis on Pat., 365.)**

They are concurrent remedies in a case like the present one.

See also Brooks *vs.* Jenkins (3 McLean, 432), above cited, *to effect that where the specification is broader than the invention, the patentee may disclaim.*

A liberal construction is to be given to the statute as the law is remedial, not penal, as stated in O'Reilly *vs.* Morse, 15 How., 62:

"The law which requires and permits him to disclaim is not penal but remedial. It is intended for the protection of the patentee as well as the public, *and ought not, therefore, to receive a construction that would restrict its operation within narrower limits than its words fairly import.* It provides: 'That when any patentee shall have in his specification claimed to be the first and original inventor or discoverer of any material or substantial part of the thing patented, of which he was not the first and original inventor, and shall have no legal or just claim to the same, *he must disclaim, in order to protect so much of the claim as is legally patented.*"

"Whether, therefore, the patent is illegal in part because he claims *more than he has sufficiently described, or more than he invented, he must, in either case, disclaim, in order to save the portion to which he is entitled*; and he is allowed to do so when the error was committed by mistake."

"*A different construction would be unjust to the public as well as to the patentee, and defeat the manifest object of the law, and produce the very evil against which it intended to guard.*"

Had a *mistake* been made in the statement of the *effect* of a certain element, *ar mode of operation*, the *office* of a reissue is made apparent. *See* Schillinger v. *Gunther*, 15 *Blachf.*, 303.

"A correction of a mistake *as to the statement of the effect* of laying the pavement in sections without interposing anything in the joint, is the office of a reissue and not of a disclaimer."

IX.

THE PATENTEES HAVE NOT "REFORMED THE SPECIFICATION" OR "ALTERED THE DESCRIPTION OF THE INVENTION" AS MATTER OF LAW. THEY HAVE NOT, EITHER, "CONVERTED A CLAIM FOR ONE THING INTO A CLAIM FOR SOMETHING ELSE," AND THEN "AMENDED THE DESCRIPTION TO EFFECTUATE SUCH A CLAIM."

When we consider that *drawings are part of a specification*, and that by them the specification may be explained and construed, it is evident that the drawings containing this fingered fire-pot are a part of the present specification. The conclusion irresistibly follows from this that the claim could not only be cut down to be made consistent therewith either by disclaimer or reissue, but that the Court might be appealed to for a liberal construction of the claim in the light of the drawings, so as to restrict the perforated pot to the construction shown in such drawings and thus save the patent, taking into consideration the state of the art, namely, the Hunt fire-pot or "basket" grate.

Now, if the drawings can be thus read into the specification, it cannot be said that the specification is reformed or the invention changed because by disclaimer the claim is limited to the form of device or combination of devices, shown in the drawings.

Now if the fingered fire-pot of the claim is restricted to the drawing form (drawings being a part of the specification), *can it be said that it is changing a claim for one thing into a claim for something else, unless it is that making a broad claim into a narrow one, is the doing of such.*

Now, nowhere is, by this disclaimer, the description of the specification amended to give effect to a limited claim; except it can be held that a declaration as to the claim so that it shall point to and be co-extensive with the structure shown in the drawings (as matter of law part of the specification), is the doing of such.

There was everything in the specification considering the drawings (which form part thereof as matter of law), *to indicate to both the defendants and the public that they were appropriating something which was new with the inventors,*—well knowing that the Hunt form was old, and in fact never put into use; and in the drawings they saw a new form—"fingered fire pot"—and which they appropriated after the inventors had exhibited it in said drawings, *but not before.* Instead of "laboring in a new field of invention," or even in the Hunt field, they came over into the inventors' "close," bringing with them nothing of their own, *and made use of the identical structure seen in the inventors' drawings pointed out by the letter G of the specification.*

On looking at all the facts, it would be a travesty on justice to say that the defendants have dispensed with something shown in the appellants' patent, and is employing what the inventors never thought of.

The drawings of the precise fingered fire-pot (to which the disclaimer limits the first claim) unquestionably could be considered as *one* form of the invention, or, to say the least, one *modification of it.* With this drawing of the fingered fire-pot staring them in the face every time the defendants looked at the patent, it was natural for them *to desire to adopt just that form or modification* of the invention.

Certainly, under such circumstances the learned Court below is not justified by its closing conclusion in the opinion that the defendants "had a right to suppose that they were laboring in a *new* field of invention."

Much less can it be justified in view of this picture of the invention which the defendants have substantially copied in their stove instead of following a form different from it (like Hunt or Russell), in saying "there was *nothing* in the description or claim to indicate to the de-

fendants, or to the public, that they were appropriating *anything* of which the patentees were the inventors," the drawings being in judgment of law a part of the description.

Equity ought not to permit the drawings of the device to which the disclaimer limits the claim to be thus severed from the description and virtually cut out of patent, more particularly when the infringers have seized on to substantially that form instead of a form that was open to their use in expired patents.

A Court of Equity errs in supposing that, under such circumstances, the defendants are laboring *at all* in a "new field."

In conclusion it is respectfully submitted that the decree of the Circuit Court ought to be reversed.

ANDREW J. TODD,
Of Counsel for the Appellants.

For the information of the learned Court the old statutes of disclaimer are here given, as the earlier adjudicated cases have reference to them.

"SEC. 7. *And be it further enacted*, That, whenever any patentee shall have, through inadvertence, accident, or mistake, made his specification of claim too broad, claiming more than that of which he was the original or first inventor, some material and substantial part of the thing patented being truly and justly his own, any such patentee, his administrators, executors and assigns, whether of the whole or of a sectional interest therein, may make disclaimer of such parts of the thing patented as the disclaimant shall not claim to hold by virtue of the patent or assignment, stating therein the extent of his interest in such patent; which disclaimer shall be in writing, attested by one or more witnesses, and recorded in the Patent Office, on payment by the person disclaiming, in manner as other patent duties are required by law to be paid, of the sum of ten dollars. And such disclaimer shall thereafter be taken and considered as part of the original specification, to the extent of the interest which shall be possessed in the patent or right secured thereby, by the disclaimant, and by those claiming by or under him, subsequent to the record thereof. But no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing the same.

"SEC. 9. *And be it further enacted*, (any thing in the fifteenth section of the act to which this is additional to the contrary notwithstanding,) That, whenever by mistake, accident, or inadvertence, and without any wilful default or intent to defraud or mislead the public, any patentee shall have in his specification claimed to be the original and first inventor or discoverer of any material or substantial part of the thing patented, of which he was not the first and original inventor, and shall have no legal or just right to claim the same, in every such case the patent shall be deemed good and valid for so much of the invention or discovery as shall be truly and *bona fide* his own; *Provided*,

It shall be a material and substantial part of the thing patented, and be definitely distinguishable from the other parts so claimed without right as aforesaid. And every such patentee, his executors, administrators, and assigns, whether of the whole or of a sectional interest therein, shall be entitled to maintain a suit at law or in equity on such patent for any infringement of such part of the invention or discovery as shall be *bona fide* his own as aforesaid, notwithstanding the specification may embrace more than he shall have any legal right to claim. But, in every such case in which a judgment or verdict shall be rendered for the plaintiff, he shall not be entitled to recover costs against the defendant, unless he shall have entered at the Patent Office, prior to the commencement of the suit, a disclaimer of all that part of the thing patented which was so claimed without right. *Provided, however,* That no person bringing any such suit shall be entitled to the benefits of the provisions contained in this section, who shall have unreasonably neglected or delayed to enter at the Patent Office a disclaimer as aforesaid."

Under sections 4917 and 4922, R. S., a disclaimer can be filed either before or after suit brought. But if filed *after* suit brought, under sec. 4922, the disclaimant loses costs. *He does not under sec.* 4917. If filed *after* suit brought, under sec. 4917, the question of costs is not an element, the penalty being, for so filing it, "that no such disclaimer shall affect any action *pending at the time of its being filed* except so far as may relate to the question of unreasonable neglect or delay in filing it."

As a disclaimer can, therefore, be filed *either before or after suit brought, under either section,* some other reason should be discovered for using either one or the other of these statutes when disclaiming.

The language in sec. 4917, "has claimed more," etc., and the language in section 4922, "has in his *specification* claimed," etc., rather leads to the conclusion expressed in many adjudicated cases, that sec. 4917 is used when the claim is *too broad* (sec. 7, Act 1837, "made his specification of claim *too broad*"), and sec. 4922, when there are different claims and, consequently, *different inventions*

described in the specification. See language at commencement of section 4922, "has *in his specification* claimed." (Sec. 9, Act of 1837, "shall have in his *specification* claimed," etc.)

This is evidently the reason why the language, "definitely distinguishable," etc., is placed in sec. 4922, and not in sec. 4917.

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CLERK.

United States Supreme Court.

IN EQUITY.

WILLIAM HAILES, JAMES GRAY AND CHARLES SELKIRK,

Appellants,

against

THE ALBANY STOVE COMPANY,

Respondent.

ARGUMENT FOR RESPONDENT.

ESEK COWEN,
Counsel for Respondent,
No. 25 North Pearl Street, Albany, N. Y.

UNITED STATES SUPREME COURT.

IN EQUITY.

WILLIAM HAILES, JAMES GRAY AND CHARLES SELKIRK, APPELLANTS.

against

THE ALBANY STOVE COMPANY, RESPONDENT.

This is an appeal from a judgment of the Circuit Court of the Northern District of New York, dismissing the complaint, in an action in equity, brought by the complainants as assignees of Lewis Rathbone and William Hailes, for an alleged infringement of letters patent, granted on the 21st day of November, 1865, for an improvement in coal heating stoves. In their answer the defendants denied the validity of the patent, and set forth certain anticipations thereof, and also denied any infringement.

THE SPECIFICATION AND CLAIM OF THE COMPLAINANTS' PATENT.

The specification commences with the declaration that the applicants have invented "a new and improved CIRCULAR STOVE" (The capitals are those of the inventors), and proceeds to state that "the invention relates to certain novel "improvements in that class of stoves which are known as "cannon or circular stoves, in consequence of their consisting "of one cylinder or cannon without flues or separated fire "chambers." It is then stated that "such stoves have "generally been constructed with a contracted outlet, and also "with provisions for admitting air above the fire."

The inventors then say that they desire to obviate the necessity of admitting air above the fire and give this reason: We have found that a much more "perfect combustion can "be maintained *by enlarging the outlet for the smoke and "admitting air through the sides of a suspended fire-pot at "all points*, and facilitating combustion by supplying oxygen

"to the burning coals, *beneath the surface of the fire-pot*, as "will be hereinafter described." The inventors then describe, among other devices, the body or "cannon" of the stove, as follows: "Above this cylinder B is the body of the stove "that forms the fire chamber C, which terminates at its "upper end in a flaring outlet Chamber D, through which the "products of combustion that are unconsumed, escape into "the smoke pipe (a)."

It is clearly this "flaring outlet" thus described, that is meant by "enlarging the outlet for the smoke" in the prior part of the specification. The inventor then describes his fire-pot, so constructed that it is suspended by a flange at its top in the ash pit of the stove. He describes it as made of cast iron of a flaring form "with vertical openings through its "sides for the admission of air into the body of coal within it." How numerous or extensive the openings shall be seems to be left entirely to the discretion of the maker. There are two indications which might serve for a guide to the intention of the patentees, but unfortunately they do not agree. The drawing shows a fire-pot, the upper part of which is solid for about two-fifths of its "vertical height." But in the prior part of the specification the patentees say that they had found it desirable to admit the air to the fire-pot "*at all points*." It may fairly be inferred that the patentees laid no stress on the point, and that whether the fire-pot was wholly or partially grated was considered a matter of indifference.

The patentees also say: "Our object is to maintain such "an intense heat in the fire-pot by the free supply of oxygen "to the incandescent coal therein *all around this fire-pot*, "that there will be little or no smoke formed after the fire is "fully started."

The claims are as follows:

"*First.* Arranging a perforated fire-pot with a grate "bottom, within a circular stove, having provision for the "admission of air below the point of suspension of said fire-"pot, substantially as described."

"*Second.* The combination of an annular horizontal reg-"ister with a suspended fire-pot which has perforated sides, "substantially as described."

It will be seen that each claim is for a "perforated fire-pot," or a "fire-pot which has perforated sides." Nothing is said in the claim, or in the specifications, indicating that the patentees intended to limit themselves to a fire-pot, only a part of whose sides was perforated. The phrases "perforated fire-pot" or "fire-pot with perforated sides" mean on their face *any* perforated fire-pot, and there is no language in the patent which declares or implies that anything different is meant.

Upon the face of the patent, then, and without any reference to the prior state of the art, we find that the first claim is for a perforated fire-pot, with a grate bottom, suspended in the ash-pit or draft chamber of a *circular stove*, which, according to the definition of the patentees themselves, is "a stove consisting of only one cylinder or cannon," through which the smoke and heated air can pass without obstruction. It will be seen that though the patentees speak of an "enlarged outlet" as an essential part of their invention, and carefully describe it, they do not mention it in their claim. It is fair to presume, therefore, that they did not mean to confine themselves to a stove with an enlarged outlet, but by limiting themselves in terms to a "circular stove" it is plain that they intended their improvement to apply only to a stove in which the enlarged outlet could be used at the discretion of the manufacturer.

Prior State of the Art.

The construction above suggested becomes a matter of certainty when we examine the state of the art at the time of this alleged invention.

To illustrate the prior state of the art, the defendant put in evidence the English patent of Robert Russell, dated January 13, 1857, a copy of which will be found upon page 93 of the record.

The patent shows two separate devices, one of a tapering fire-pot or basket having grated sides, but without a grate at the bottom. "Another modification consists in constructing "the fire-basket with perforated sides all around it by means "of tubes." The patentee adds that "solid bars may be "used instead of tubes," and, again, "instead of making the "fire dishes to turn on a pivot as previously described, I

"sometimes hang them by a projection or flange formed upon "the upper flange of a fire-dish, which flange rests upon a "corresponding projection on the inside of the casing." When the latter modification is used the inventor provides for a grated bottom to the fire-dish in the following language: (Page 96.) "The lower ring (*f*) may be formed in one piece "with the bottom of the fire-basket and may be made solid "or with apertures. * * * Apertures may be formed "in the plate (*j*) to correspond to similar holes in the bottom "of the fire-basket so as to regulate the admission of air to "the fuel."

It will be seen, therefore, that the Russell stove contains all the elements of the first claim of the complainant's patent, the perforated fire-pot with a grate bottom, suspended by a flange from the body of the stove, projecting into an ash pit or draft chamber, having provision for the admission of air below the point of suspension of the fire-pot. The only difference is that the device of Russell is not placed in a circular stove as defined in the patent of Rathbone & Hailes, the Russell stove being composed of two cylinders, one of which forms the coal magazine or reservoir. (See testimony of Mr. Hagan, page 88 question 34.)

The only substantial difference which the defendant's expert, Mr. Selkirk, pretends to find between the Russell stove and the Rathbone & Hailes patent is that the fire-pot of the former is grated nearly to the top, while that of the latter is grated for something more than half of its vertical height.

The defendant also put in evidence letters patent to Zebulon Hunt, which will be found at page 97. The patent shows a grated fire-pot of a flaring form, suspended within the draft chamber of the stove, and provided with a grated bottom, the fire-pot suspended in precisely the same manner as in the patent in suit, and the ash-pit is provided with means for the admission of air below the point of suspension of the fire-pot. (See the evidence of Mr. Hagan, page 89, question 35.)

Thus the Hunt patent contains all the elements mentioned in the first claim of the Rathbone & Hailes patent except that the Hunt stove, like the Russell, is a magazine stove and not a "circular or cannon stove," as defined by the specifications of the patent in suit.

Scope of the Complainants' Patent.

Having thus examined the state of the art prior to the application of the complainant's, it is now in order to ask what the invention, if any, really was.

Grated fire-pots or vertical grates with horizontal grates at the bottom placed in the draft chambers of stoves, so that the air from the draft chamber could directly reach the sides of the fuel in the fire-pot, were in common use at the time of the alleged invention. Fire pots of a flaring form, with "perforated" or grated sides suspended in the draft chamber of *a base burning or magazine stove* by a flange at the top, which rested on another flange at the point of connection between the draft chamber and the body of the stove, were old, as will be seen by an examination of the Russell and Hunt patents. Keeping these prior constructions in mind, let us again look at the first claim of the complainant's patent.

"Arranging a perforated fire-pot with a grate bottom within "a circular stove, having provision for the admission of air "below the point of suspension of said fire-pot substantially "as described."

The elements of the combination or "arrangement" are these. 1st. A perforated fire-pot with a grate bottom; 2d. A draft chamber *in* which the fire-pot is suspended; 3d. The combustion chamber or cylinder of *a circular stove from* which the fire-pot is suspended.

Taking the Hunt patent as representing the state of the art at the time of the supposed invention of Rathbone & Hailes, what was there in that invention which can lay any possible claim to novelty? Not a perforated fire-pot. Hunt has that. Not a perforated fire-pot with a grate bottom. Hunt has that too. Not a perforated fire-pot with grate bottom, suspended by a flange, in a draft chamber, having provision for the admission of air below the point of suspension of the fire-pot, for Hunt shows all that as well. There remains but a single distinction between the Hunt device and that of Rathbone & Hailes, upon which a patent could possibly be founded, and all the circumstances show that it was upon this distinction that the patent was allowed by the office. The file wrapper and contents of the Rathbone & Hailes patent were put in evidence by the defendants. (Page 101.) The applica-

tion, as originally drawn, contained a third claim, reading as follows:

"*Third.* A perforated fire-pot which is constructed with a "flange around its upper edge, and a grate in its lower end, "substantially in the manner described." (Fol. 1204.) This claim was rejected by an office-letter that appears on page 104 of defendant's record in the following language:

"The third claim in your application for patent for *circular* "stove, has been anticipated in the patent of Z. Hunt, June "14, 1884, for coal stove."

And on the same page will be found a letter of the patentees acquiescing in the rejection, and directing the claim to be erased.

Here is an explicit decision by the office, admitted by the patentees to be correct, that the perforated fire-pot, constructed with a flange around the edge, and a grate in its lower end, described in the Rathbone & Hailes application, was precisely the same thing as the perforated and flanged fire-pot with a grate in its lower end, shown in the Hunt patent.

How, then, could the patent office, after this decision allow the first claim of the Rathbone & Hailes patent. It could not be on the ground that the flanged and perforated fire-pot was suspended in a draft chamber, having provisions for the admission of air below the point of suspension, for that exact construction was also in the Hunt patent. There is but one explanation. It will be remembered that in the letter of rejection the examiner speaks of the application as being for a "circular stove."

The first claim is for "arranging a perforated fire-pot with a grate bottom in a *circular stove.*" It is clear that these words do not refer to the circular or cylindrical form of the stove, for there is no conceivable reason why a perforated fire-pot, if useful at all, would not be just as useful in a square stove, as in one of a circular form. It is plain that the words "circular stove" in the first claim of the complainant's patent, and in the examiner's letter, mean something more than a stove whose outer form is cylindrical. What that meaning is can be discovered by looking at the specification. "This invention," say the patentees, "relates to certain "novel improvements on that class of stoves which are known

"as 'cannon' or circular stoves in consequence of their consisting of *only one cylinder or cannon without flues or separated fire-chambers.*"

Thus the patentees say substantially: Our invention relates to a circular stove. A circular stove is a cannon stove. A cannon stove is one consisting of a single cylinder without flues or separated fire chambers; that is, without a fire chamber separate from the fire-pot proper. We improve this stove in two ways. First, we enlarge the outlet. Second, we place a separate fire-pot below the fire-chamber, but in other respects it remains a cannon stove, that is, it consists of a single cylinder without flues. As the first claim of the patent is for arranging a perforated fire-pot with a grate bottom within a *circular* stove, it follows that the true construction of the claim is that it is for arranging such fire-pot within a stove "consisting of a single cylinder or cannon without flues." This is not only the reasonable construction of the patent, but it is one that is absolutely necessary to sustain the patent. The Russell & Hunt stoves are not "circular stoves" within the definition of the patent. They are not single cylinders or cannons without flues. In each the body of the stove above the draft chamber is composed of two cylinders, an outer and an inner one, the latter being used as a magazine or reservoir of fuel. Between the two cylinders is an annular flue through which the products of combustion pass on their way to the exhaust pipe. And this is the *sole* difference between the Russell & Hunt patents and that of Rathbone & Hailes. Once admit that the words "circular stove" in the first claim of complainant's means any stove whose outer form is circular or means a magazine stove, and the invention of Rathbone & Hailes is anticipated and the patent is void. For we have a right to inquire not only what Rathbone & Hailes invented, but of *what did the patent office intend to grant a monopoly.* They could get no more, in any event, than the patent office intended to grant; such intent to be gathered, of course, from the patent, read in connection with all the circumstances surrounding the grant.

Before the grant was made, the office had asserted and the patentees had admitted that the perforated fire-pot of Rathbone & Hailes, was the same thing as the grated fire-pot of Hunt. The patent must be read in the light of this concession. If the two fire-pots *are* alike then the only difference between

the two stoves is that one is a *cannon* stove and the other contains a coal magazine and an annular flue. It follows, therefore, that the first claim would not have been granted if it had not contained a circular stove as one element of the combination, and that the office did not understand that the term circular stove included a base-burner.

What answer was made by the complainants to this apparently conclusive argument as to the construction of this patent?

Mr. Alexander Selkirk, a man of ability by nature and an expert by art, comes gallantly to the rescue. With the fine perception of the necessities of the case peculiar to men of genius, he strikes out on an entirely new line, and practically declares that at the time the patent was granted the patentees had not the least idea of what their invention really was. It is not, according to Mr. Selkirk, for the application of a suspended perforated fire-pot with grate bottom to a stove consisting of a single cylinder without flues, but it is for a fire-pot, suspended in the ash pit of any stove, of a circular form, where the fire-pot is grated substantially to the extent shown in the Rathbone & Hailes drawing, namely for the lower three-fifths of its vertical height. The real origin of this singular interpretation lies in the fact that the Russell & Hunt fire-pots are made of bars, so that the whole of the vertical wall is grated except the rings at the top and bottom. As the fact that the Rathbone & Hailes fire-pot is only partially grated formed the only possible distinction between that fire-pot and those of Russell & Hunt, it was natural for Mr. Selkirk to find that the essence of the patent was in that difference. Whether this alleged invention is valuable or not it is certain that it never was the invention of Rathbone & Hailes, they never dreamed that this particular feature of the fire-pot had anything to do with it. It is wholly the invention of Mr. Selkirk, and if it amounts to anything, he and he alone is entitled to the credit. Mr. Selkirk imagines that a great advantage is obtained by making the fire-pot solid for a certain distance from the top and grating the rest of the vertical wall. His theory was that if the sides of the fire-pot were slotted like the Hunt and Russell fire-pots, to within an inch of the top, the air would pass over the top of the fuel and finally *put out the fire*.

In face of the fact that the ordinary parlor grate is grated clear to the top and burns anthracite without the slighest difficulty, in face of the fact that bituminous coal will burn freely on the flat surface of a fire-place, without any grate at all; this expert thought that a fire burning in a basket grate, or grated fire-pot suspended in a draft-chamber, to which sufficient air is admitted would dampen down or go out. No one who has not witnessed such a phenomenon, will receive the statement with anything but the liveliest incredulity. This theory, too, is put forward in face of the statement in the patent, that the device is especially designed for burning soft coal. (Page 79.)

But suppose, for the sake of the argument, that he were correct, what title have these complainants to such an invention? It is one of the wise provisions of our patent law that in consideration of the protection he receives the inventor must disclose to the public the advantage to be derived from his invention and the best way known to himself to secure that advantage. If the patentees had really anticipated Mr. Selkirk in this important invention, they would have drawn a very different specification.

They would have said nothing about the character of the stove above the draft chamber, as that, according to Mr. Selkirk, is wholly immaterial. They would have said substantially. "Our invention relates to perforated fire-pots "suspended in the draft chambers of coal-burning stoves. "Heretofore such fire-pots have been made either with solid "vertical walls, or in the 'basket' form, that is, with the sides "perforated or grated from top to bottom. The solid "wall does not admit sufficient air to the fire, and the difficulty "with the basket construction is that the air passes through "the opening near the top of the fuel and dampens down the "fire and causes it to go out. We have obviated this difficulty "by grating or perforating the walls of our fire-pot from the "bottom for a little more than half of their vertical height." Considering what the invention is, according to the learned Mr. Selkirk, the court will be surprised to learn that the specification does not contain the above language, nor any words equivalent thereto. On the contrary, the patentees seem to have done their best to conceal the Selkirk invention from the public. They declare that their invention consists, among other things, in "admitting air through the sides of a

"suspended fire-pot *at all points* and the facilitating com-
"bustion by supplying oxygen to the burning coals *beneath*
"*the surface* of the fire-pot." That means *all* the burning coals beneath the top of the fire-pot or it means nothing.

They also say (fol. 1201 of defendant's record) "our object "is to maintain such an intense heat in fire-pot, by the free "supply of oxygen to the incandescent coal therein, *all* "*around this fire-pot*, that there will be little or no smoke "formed after the fire is fully started. The fire-pot is to be "made with vertical openings through its sides" (fol. 1197, defendant's record), and there is no limitation of the openings to the lower part of the fire-pot, or anything to that effect. The claims, as we have seen, are also unlimited and cover any fire-pot with perforations through its sides to permit the access of air to the coal therein. It will also be remembered, as I have stated, that the patentees claimed a perforated fire-pot, with a grate at the bottom and a flange at the top. The office said such a fire-pot was shown by Hunt. They *admitted that the office was right*, and did not say that Hunt's fire-pot was grated all the way up, and theirs only half way, or anything to that effect. When a patentee claims something which is not new, the court will not give him the right to hold a device, which he did not describe or claim, and did not contemplate when he made his application.

The case of Dennis v. Eddy (95 U. S., 560) is a good illustration of the above proposition. The action was for the infringement of a patent in shovel plows. It described the mould board of the plow as "scolloped out so as to form a recess" through which the earth disturbed by the plow would fall into the furrow behind it, leaving the earth in a loose friable condition. The claim was for a mould board "constructed "highest at its outer edges so as to form on each side of the "standard A a recess c." The proof was that mould boards with recesses had been constructed before, but that the recesses were bounded by straight lines, while the recesses shown in the drawings of the patent were of a semi-circular form. The Circuit Court held that the patent was for the *curved form* of the recess. The Supreme Court reversed this judgment and Judge Hunt, in delivering the opinion of the court, said (page 568): "If that form" (a curve) "had been "deemed material, it would have been inserted where the "patentee sets out with precision what it is that he claims.

"In the claim it is described by the words 'constructed "highest at its outer edges so as to form on each side a "recess' through which the earth may pass. A recess made "by the outer edges being higher than the inner parts was "the effect intended to be provided for, and that only. "If it had been intended to describe a recess made "by a curve, to the exclusion of a recess made in any "other manner, it was very easy to say so; but the patentee "*did not so say and we think he did not so mean.*" So in this case, if the patentees had intended a fire-pot with the lower half perforated or grated to the exclusion of other forms of perforated fire-pots, they would have inserted words showing such intention somewhere in the specification. They did not so say, and it is plain that they did not so mean. Mr. Selkirk says that he has made experiments which convince him that there is an advantage in a fire-pot with the lower half grated over one that is wholly grated. But what proof is there that the patentees ever made such experiments, or that the fact was known to any one, until long after the date of this patent? Certainly there is nothing in the specification to indicate that such an idea ever entered the head of the patentees. Nothing is more clear than that the patentee must point out to the public the way to obtain the benefit of the alleged improvement, and that he must accurately define his invention, distinguishing between what is new and what is old. Now, according to the real discoverer of this invention, Mr. Selkirk, it is a very elastic contrivance. The solid portion of the fire-pot in the Fort Orange stove, which Mr. Selkirk thinks contains the complainant's device, is three and one-half inches, and the depth of the grated portion two and one-quarter inches. Mr. Selkirk, in answer to questions put by the counsel for the complainant, said that a fire-pot of the size of that of the Fort Orange stove, with *three inches* of the wall solid, would be within the scope of the complainant's patent, that with a wall *two inches and a half* solid, it "might possibly be" within the patent, that as to a depth of *two inches* he "would not undertake to state," that with a solid wall to the depth of *one and a half inches* it would *not* be the Rathbone & Hailes invention (page 72, questions 278 to 281). So, as to the other end of the fire-pot, Mr. Selkirk thinks that if slotted *two inches and a half*, it would be the Rathbone & Hailes fire-pot; if *one inch and a half* it would not be; and if

two inches, it would "approach to being the same." (Pages 72 to 74, questions 282 to 298.) According to Mr. Selkirk, then, a grating extending from the bottom of the fire-pot *two inches and a half*, or to any height between that point and one *three inches* from the top would clearly be the same thing as the Rathbone & Hailes fire-pot; one extending to within *one and a half inches* of the top, or to only *one and one-half inches* from the bottom, would just as clearly not be such a fire-pot, while if the grating extends more than *one and one-half inches* from the bottom, but *less* than *two and one-half inches*, or if it extends to a point *less* than *three inches* from the top but *more* than *one and one-half inches*, the complainant's expert and real inventor does not know whether it would be substantially the same thing or not.

Here, then, is a patent which, according to the most favorable evidence that can be produced, depends wholly on a question of *degrees*; the same thing has confessedly been done before, but to a greater or less degree, and it is upon that difference that the validity of the invention depends. It is a question of *half inches*; grating a fire-pot *half an inch* more or less makes all the difference between an act, which the maker has a perfect right to do, and an invasion of the complainant's patent. Yet there is not in the whole specification the faintest indication of the depth, to which the fire-pot must be grated, in order to obtain the benefit of the alleged improvement. It is true that the actual fire-pot shown in the drawing is slotted for the lower three-fifths of its vertical height, but whether the inventor meant to confine himself to that exact height or not cannot be ascertained. It cannot be said that the invention covers grating the fire-pot enough to produce a certain effect, for no such effect is spoken of in the specification.

The whole evidence before the court showing that it is of the slightest advantage to have the upper portion of the fire-pot solid rests on the unsupported opinion of the witnesses Selkirk and Keep, and is founded on certain inconclusive and absurd experiments. Keep, for instance, stated that he made experiments with a stove of his own, which satisfied him that it was desirable to have the upper portion of the fire-pot solid. On cross-examination he admitted that he did not actually try the fire-pots with narrow rings; he used fire-pots with wide rings and varying depths of coal. (Page

65, Q. 34, 35.) He found, what he ought to have known without an experiment, that the more coal he put in the fire-pot the better combustion was had. Mr. Selkirk and Mr. Keep tried an experiment equally inconclusive. They took an ordinary fire-pot and grated it to the top. Filling it with fuel it was found that the fire burned "with a bluish flame," as all fires do when first started. Apparently before it had fairly got to going it was "dampered down" and left all night. In the morning the draft was opened, but no new coal was put on this fire, which had burned all night, and the experts were greatly astonished that it did not burn right up like a new fire. Then Mr. Selkirk stopped up the openings in the upper part of the grate and put on fresh coal, when, to the great delight of these wonderful experts, the fire burned up briskly, as a fire usually will when supplied with fresh coal. (Page 60, Q. 61.) There was undoubtedly a difference in the combustion in the experiments related, but not for the reason given by the witnesses. Put a single piece of anthracite coal in a grate and nothing can induce it to burn. Try three or four pieces and you will have the same ill-success. A layer two or three inches deep, unless of the very smallest coal, will do no better. To produce good combustion, there must be a body of coal several inches deep, and, until the fire is actually choked by impeding the draft, the more coal in the grate the better the combustion. It was for this reason that when Messrs. Keep and Selkirk put an inch or two more coal on the fire they had better combustion, and the same thing would have occurred with any kind of a fire-pot. When the experimenters used the magazine of the stove, so as to keep the fire-pot uniformly full, they had no trouble.

Mr. Selkirk says "the combustion was in a small degree better," but does not condescend to say whether it was or was not as good as in ordinary stoves. Mr. Keep honestly says the combustion, when the magazine was used, was "much better" (page 63, Q. 17) and "very good." (Q. 18.) It appears, therefore, by the complainant's own evidence, that there is no advantage, at least in a magazine or base-burning stove, in using a fire-pot partially grated, instead of wholly grated, as in a base-burning stove the fire-pot is kept "heaping" full and the top of the heap is within the mouth

of the magazine. (Page 107, Q. 9.) And the defendant's Fort Orange stove is a base burner.

But we are not left to conjecture, nor to the complainant's evidence in this matter. Mr. Hagan, the defendant's expert, an able, scientific and truthful man, at the request of the defendant's counsel, tested the question whether the use of the Fort Orange fire-pot, as made, afforded any better result than the use of a fire-pot of the same size and shape, grated from top to bottom. He first tried the Fort Orange stove, with the ordinary partially grated fire-pot, as it is made and used. He operated it for twenty-four hours with the direct draft, and for twenty-four more with the reversible draft. He then took out the fire-pot and inserted one just like it, except that it was grated to within an inch and a-half of the top. He operated that in the same way; the direct and reversible draft twenty-four hours each. He declares that the stove, with either fire-pot, burned equally well, and that he could not discover the slightest difference. (Page 105, Q. 2.) And this evidence is not only uncontradicted, but is, as we have seen, supported by that of complainant's witness, Keep. Moreover, Mr. Hagan says that he continually operated the stove, with the fire-pot wholly grated, from the twentieth day of Marc . to the latter part of April, and during all that time the combustion was as good as with the partially grated pot. (Page 113, Q. 44.)

So it seems that the whole of this alleged invention rests upon a pure *myth*, an idea that has no existence in fact, which the patentees never dreamed of, and which originated in the brain of an expert with a desperate case, and no other hope of making it out.

Infringement.

Assuming that the defendant is right as to the construction of the complainant's patent, namely that it is for a perforated fire-pot suspended from the fire chamber of a "circular stove consisting of a 'single cylinder or cannon without flues,'" it is perfectly plain that the defendant's Fort Orange stove is no infringement of the patent, for the Fort Orange stove is one of the class known as "base burners" and does not consist of a "single cylinder without flues." On the contrary, like the Russell stove and the Hunt stove, it consists of an outer and inner cylinder between which is an annular flue for

the passage of the products of combustion. So far from having an "enlarged outlet" the presence of the magazine necessarily largely contracts the outlet which would exist if the inner cylinder were not used.

The word "circular" cannot refer to the outward form of the stove, for "circular stoves," in this sense, were as old as the hills, being shown in all the prior patents put in evidence, and as the outward form of the stove has nothing whatever to do with its mode of operation, this interpretation makes absolute nonsense of the claim and the patent. As the patentees use the term in their claim they evidently mean a circular or cannon stove as defined by them, *except as altered by their invention*, that is a single cylinder without flues, but improved by the addition of their separate fire-pot or chamber.

As to the second claim, I do not understand that there is any pretense of infringement by the defendants.

It follows that there is no ground for asserting that either claim of this patent is infringed by the Fort Orange stove.

Plaintiff's Alleged Disclaimer.

Having apparently come to the conclusion that the defendants are right in their contention that the first claim of this patent was anticipated by Hunt, the complainants have adopted the desperate remedy of filing a "disclaimer twenty-two days before the expiration of the patent, by which they seek to amend the first claim of the patent so as to claim a fire-pot" with substantially "the lower half grated." This "disclaimer" can serve no purpose in this case except as an admission that the first claim, as originally drawn, was void, for several reasons.

First. This is in no legal sense a disclaimer. It does not disclaim something which the patentees have claimed but did not invent, it merely *amends* a claim by putting a construction upon it which the patentees never intended.

Now, a disclaimer was never intended by the statute to be a means of amending and putting a new construction on the language of the patent. That is the office of a reissue. Section 4916 of the Revised Statutes says: "Whenever any patent is inoperative or "invalid *by reason of the patentee claiming as his own more than he has a right to claim as new*, the commissioner shall, etc., cause a new patent for the

same invention and *in accordance with the corrected specification*" to be issued. That is where the claim of the patent or all the claims are too broad. The next section, 4917, provides for a case where part of the claims are too broad and others are valid. In that case the patent may be held valid for the *good claims*, provided that there is no unreasonable delay or neglect in filing a disclaimer of the *bad* ones.

But the disclaimer is not to be considered as part of the original specification until "after the record thereof" and "shall not affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it." There is no provision here for correcting the specification, but only for disclaiming such parts, claimed in the original, as the patentee has not invented.

Section 4922 provides for the case of actions on a patent which contains claims that are valid, together with others which claim more than was the invention of the patentee, He "may sustain an action for the infringement of any part thereof which was *bona fide* his own, if it is a material and substantial part of the thing patented, *and definitely distinguishable from the parts claimed without right.*" Now, what is meant by the words I have italicised? It certainly does not mean that the parts which are *bona fide* the patentee's own may be a portion of those that are claimed without right. No, the law treats each claim as an entire thing and a separate invention. It declares that the suit may be maintained for the parts rightfully claimed, if there is no unreasonable delay in disclaiming the parts claimed without right. But it gives no authority for using a disclaimer to amend and correct the claim that is made without right. That, as I have said, is the office of a reissue, and it is not probable that the statute intended to give two such different remedies for the same defect, and, by the contrary construction, there would never be any occasion for resorting to a reissue, in one of the cases where the statute expressly says that it may be obtained.

Second. The disclaimer cannot affect this suit, being filed during its pendency, except that if there is any good claim in the patent, not affected by the disclaimer, such filing may be used to show that it was done in a reasonable time, and that the whole patent ought not to be avoided because part is too broad.

I am aware that there are cases in some of the Circuit Courts where it has been held that a disclaimer could be filed pending a suit, and the suit decided as though the disclaimer were a part of the specification, and the defendant held for infringing the claim as amended by the disclaimer. This is certainly a very strange state of the law. The law requires the patentee, for the benefit of the public, to specifically point out what part of his invention he claims as new. No matter what he describes in a specification, he can only recover for an infringement of what he claims as new.

Railroad Co. v. Mellon, 104 U. S., 112.

Now, a patentee points out as new something which he did not invent. He invented some part of it, but that he does not claim. He cannot recover on the claim, for that is too broad; he cannot recover for an infringement of what he actually invented, for that he has not claimed. According to these decisions he may commence an action, and when he is beaten by proof that his claim is anticipated, he may file a disclaimer, and thereby amend his claim so as to cover what he did invent, and recover damages for infringing a patent which was absolutely void when the infringement was committed. Thus the complainant may at the tail end of his case amend, not by stating in better form a cause of action which existed when the suit was commenced, but by creating an entirely new cause of action, which never had existed until the disclaimer was filed. To recover damages which were sustained seventeen years before a cause of action existed must be a privilege peculiar to patentees, and one the value of which is not much diminished by the proviso that the recovery must be without costs.

I must say, with all deference, that the Circuit Courts have, in my judgment, only reached this conclusion by an utter misunderstanding of the statute. Neither section 4917, nor section 4922 permits a recovery upon a claim as amended by a disclaimer, filed during the pendency of the suit.

Section 4917 expressly declares that the disclaimer shall not affect pending suits, and there is nothing in section 4922 which changes or modifies that declaration.

The true meaning of the statute is this: A patent which claims more than the patentee invented is *prima facie* void. But where the patentee is entitled to some material and sub-

stantial part of the invention, which is *properly claimed, it* may be sustained for that part, provided there is no unreasonable delay in disclaiming the parts to which he is not entitled. If an action is commenced on such a patent, *after* a disclaimer has been filed, the patentee may recover for the parts *bona fide* his own, with costs. If he commences before a disclaimer has been filed, he may recover for the parts of the invention which are his own, without costs, if there has not been unreasonable delay in disclaiming the parts which are *not* his own. It is not always necessary to file a disclaimer at all, under section 4922, for the patentee may be first advised, by the decision in the case, that he is not the first inventor of some part of what he has claimed. If he files a disclaimer pending the suit, that action is not in any manner affected by it, except that he may use the disclaimer *for the purpose of* showing that *he has filed it without unreasonable delay, and thereby repel the presumption that the entire patent is void, good claims and all, because he has claimed too much.* The law, too, says that the disclaimer shall be deemed a part of the specification "after the record thereof." I submit that this does not mean that the disclaimer shall be deemed *to have been* a part of the specification, from the date of the patent, but that the specification, after the filing of the disclaimer, shall be construed as though it had originally contained such disclaimer.

This so-called "disclaimer" is simply a material amendment of the specification and claim of the patent. If the patentees, after waiting sixteen years, ten months and nine days, had sent to the patent office a notice to this effect: "We "hereby amend the first claim of our patent, of such a date, "as follows: Strike out said claim, and insert, a fire-pot, sus- "pended from its upper edge, with substantially the upper "half of its sides made solid, and substantially the lower half "of its sides, containing perforations or openings," such action would have been a nullity. But because they do the same thing, in a negative way, by saying that they disclaim everything *but* a construction, which is neither described nor claimed in the original patent, and call the notice a "disclaimer" they assert that they can amend, without a reissue, and make people who were acting lawfully, up to the time of filing the disclaimer, infringers, from the date of the patent, nearly seventeen years before.

Third. The court in the First Circuit has certainly gone very far in allowing disclaimers, but upon examining the cases it will be perceived that they are all cases in which the specification described two or more distinct and separate inventions, and all but one, so far as I have been able to examine, are cases where the *claim* was also for two or more distinct inventions.

(1.) The case of Silsbee v. Foote (14 Howard, 218), was one in which a disclaimer was filed to part of a claim.

But the patentee did not ask to recover on the amended claim. As will be seen, by examining the case in the Circuit Court, no recovery was asked except upon the *third* claim, which was for a combination. And Judge Grear, speaking of the case (in 14 Howard), says that it was on the *third* claim alone that it was decided, on the trial at law, that the defendant was liable.

20 Howard, 389.

(2.) In Silbee v. Foote (20 Howard, 378), *no disclaimer had been filed pending the suit.* This case has been widely misunderstood. The Court did not sustain a disclaimer to a part of the claim. It will be seen, by a comparison of dates, that all the disclaimer filed by Foote was in 1847, while the suit reported in 20 Howard was brought in 1848. A feigned issue was made on the first and third claims, upon which the jury decided against the validity of both claims. Judge Nelson approved the verdict as to the first claim, but held the third valid, in spite of the verdict. The question decided was not that the disclaimer filed in 1847 was valid, but that the *whole* of the original first claim being anticipated, even that part which was left in by the disclaimer of 1847, the complainant could still recover, because the facts rendering the *entire* claim void had been discovered during the trial, and there was no unreasonable delay in omitting to file a *second* disclaimer.

This case is, therefore, no authority for holding that a claim can be amended by a disclaimer pending a suit and recovery had on the claim as amended.

(3.) In McCormick v. Seymour (3 Blatchford, 222), Judge Nelson declares that a disclaimer is proper when the patentee

"makes a claim which is not well founded in the same patent "with other claims which *are* well founded."

(4.) In Tuck v. Bramhill (6 Blatchford, 95), the claim was for a roll "either in connection with an india rubber core or "other elastic material, or without, as herein set forth." The roll without the core was old, but with the core was new, and it was held that the claim was equivalent to two separate claims, one for the roll *with* the core, and the other for the roll *without* the core, and that the former having been disclaimed pending the suit, plaintiff could recover on the other.

(5.) This case was followed in Taylor v. Archer (8 Blatchford, 315), where the claim was for "the use of glue or glue composition." The use of glue being old, the patentee was permitted to disclaim it, and confine it to glue composition. Also in Myers v. France (8 Blatchford, 446), where the claim was for "the employment or use of the deflecting plates E E, *one or both*, placed at the sides of the saw," etc. The use of *one* deflecting plate was old and was disclaimed, and the invention confined to the use of two.

(6.) In Schillinger v. Gunther (17 Blatchford, 66), the court went one step further, and allowed a recovery when the claim itself was not divisible into two or more separate and distinct inventions.

The first claim was for "a concrete pavement, laid in "detached blocks or sections, substantially in the manner "shown and described." The complainant filed a disclaimer of "so much of said first claim as includes a concrete pave-"ment made of plastic material, laid in detached blocks or "sections without interposing anything between their joints in "the process of formation."

While I do not think this case was fairly within the statute, it does not affect the case before the court, even if correct.

For the specification plainly and clearly described and pointed out the mode of operation, and the advantages of two separate and distinct inventions, one for plastic block with tarred paper, or its equivalent, interposed between them and the other for similar blocks with nothing between them. The court assumed, erroneously, I think, that the single first claim was, in substance, for these two separate inventions. I

have been able to find no other case where two inventions were not separately *claimed*, either in separate claims, or by the use of equivalent language, in a single claim, except the case of Aiken v. Dolan (3 Fisher, 209), of which I have only to say that it was decided upon an entire misconstruction of the law, and contains a doctrine which this court will not sustain for a moment. That doctrine is, that it is not at all necessary for a patentee, when he takes out his patent, to comply with the law, which declares that he shall specify what is new in his description. He may obtain a patent, every claim of which is void, for want of novelty. He may then, at any time, before the patent expires, and even preceding a suit, point out what is new, for the first time, by a disclaimer, and recover for an infringment which occurred at any time during the life of the patent.

(7.) Under the cases cited, I concede that, if the patentees had claimed, first a wholly slotted fire-pot, and second, a partially slotted fire-pot, in combination with the other parts of the stove described, they might have disclaimed the first claim and have recovered on the second. If they had claimed in a single claim, with a proper specification, "a fire-pot either wholly or partially slotted, as herein described," a disclaimer might have been proper. If, with the present claim, after setting forth the advantages of a grated fire-pot as they have done, they had added: "We have "discovered that a peculiar advantage is attainable by "using a fire-pot, slotted about half way up, as, if slotted "much nearer the top, the draft will pass over the top of the "fuel, and, if slotted much nearer the bottom, the accumu-"lated ashes will obstruct the draft," even then, under the case of Schillinger v. Gunther, they could have disclaimed all but the last described feature.

The difficulty is that the patentees have nowhere declared or given the public to understand that a partially grated fire-pot was any part of their invention. The patent does not describe *two distinct inventions*, but *a single invention*, namely, the combination of *a grated fire pot* with certain other parts of a coal stove. It is true that the drawing shows a fire-pot partially grated, but the public had a right to say (reading the whole specification) that that drawing was intended as an illustration of one form of fire-pot, out of per-

haps a hundred forms, which might be used in applying the invention. Now comes in the disclaimer, and instead of disclaiming one of several distinct inventions, informs the public that this special form of fire-pot, upon which no stress was laid in the original specification, is the real "simon pure" invention. This will not do. A disclaimer cannot be used to supply a defect in the specification, when that has failed to state the nature and object of the invention, nor can it be used to declare something a material part of the invention, which the specification has treated as immaterial. Such amendments are the proper office of a reissue. This device sought to be secured by the disclaimer is not, in the language of the statute, "definitely distinguishable from the parts claimed without right." No one would dream, from reading the original patent, that a partially grated fire-pot was in the minds of the inventors, and certainly not that it was a distinct and separate invention, from the combination described in the first claim.

Fourth. The disclaimer cannot be used in this suit because not properly pleaded. The idea of bringing a material fact not only essential to the cause of action, but, as in this case, constituting the entire cause of action by "a suggestion on the record," after the evidence is all in, is one of such novelty that the counsel for the complainant should patent it at once. If it is to be relied upon at all, it should be embodied, like other material facts, happening after the commencement of a suit, in a supplemental complaint.

The law does not permit a disclaimer as a matter of course. The erroneous claim must have been made "through inadvertence, accident or mistake," "without any willful default or intent to defraud or mislead the public."

All these facts should be alleged by the complainant, and the defendant should have an opportunity to answer them. They are all issuable facts and the defendant has a right to give proof and to be heard as to each one of them. Again the disclaimer must be filed "without unreasonable delay or neglect." This is affirmative defense which the defendant has a right to set up and prove. Even in Schillinger v. Gunther the disclaimer was pleaded, and the defendant had an opportunity to try its validity. In this case I submit that

the defendant ought not to be foreclosed by the novel device of a "suggestion upon the record."

Fifth. There is enough in the case to show that there has been most unreasonable and inexcusable delay and neglect in filing this disclaimer. The anticipation which has rendered it necessary, in the judgment of the complainants, and their counsel, to file this disclaimer, is the Zebulon Hunt patent of 1864. This patent was cited to the patentees by the examiner before their patent was granted. Ever since that time they have had full notice, at least the same notice they have now, that their first claim was too broad. Holding a seventeen-year patent, they have waited sixteen years and over eleven months before filing their disclaimer. This is not a case where the patentee is advised, for the first time, by the decision that the patent is too broad. This disclaimer was filed before the decision, and when the patentees had no more information than they had the day that they took out their patent. If there was ever a *prima facie* case of unreasonable delay and neglect, this would seem to be the one.

Sixth. There is another, and, as it seems to me, an entirely conclusive answer to the case, made by filing the disclaimer. The complainants have done precisely what this court has frequently declared shall not de done by a reissue. Instead of *narrowing* their alleged invention, they have actually *broadened* it. The original claim read as follows: "Arranging "a perforated fire-pot, *with a grate bottom, within a circular* "*stove, having provision for the admission of air below the* "*point of suspension of said fire-pot.*" This is a combination claim, for the *arrangement* of a fire-pot with other devices. The disclaimer declares that the material or substantial thing, *not* disclaimed, is as follows: "A fire-pot "suspended from its upper edge, with substantially the "upper half of its sides made solid, and substantially the "lower half of its sides containing perforations or openings." It will be seen that this claim is for any suspended fire-pot, with or without a grate bottom, within a circular stove, or any other stove, whether the stove has or has not provisions for the admission of air below the point of suspension of the fire-pot. In other words, the complainants have disclaimed the combination "patented in and by said claim," and have

substituted a claim for one of the elements of said combination, and, by so doing, have deprived the defendant of the defense, that, though it may use the fire-pot of the patent it does not use the patented combination. It does not need the citation of authorities to show that this is just what this court has repeatedly decided cannot be done, even by a reissue. It is certainly very much to the credit of the complainants' counsel, if he has discovered a way by which, within a month of the expiration of a patent he can broaden the claim, and collect damages on the claim so broadened from the date of the patent.

The judgment of the Circuit Court, dismissing the complaint, should be affirmed.

ESEK COWEN,
Of Counsel for Respondent.

